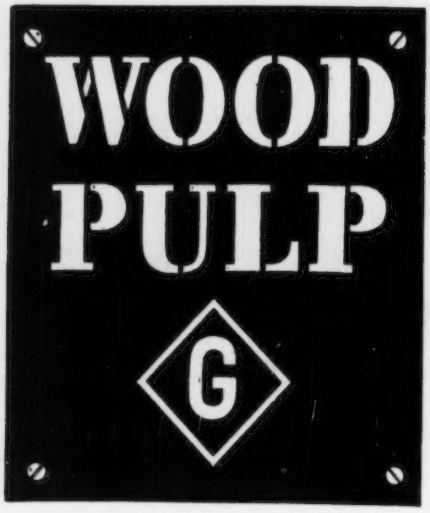
JUNE 15, 1950

SUPERINTENDENT'S NUMBER

# Paper TRADE JOURNAL




*Established 1886*

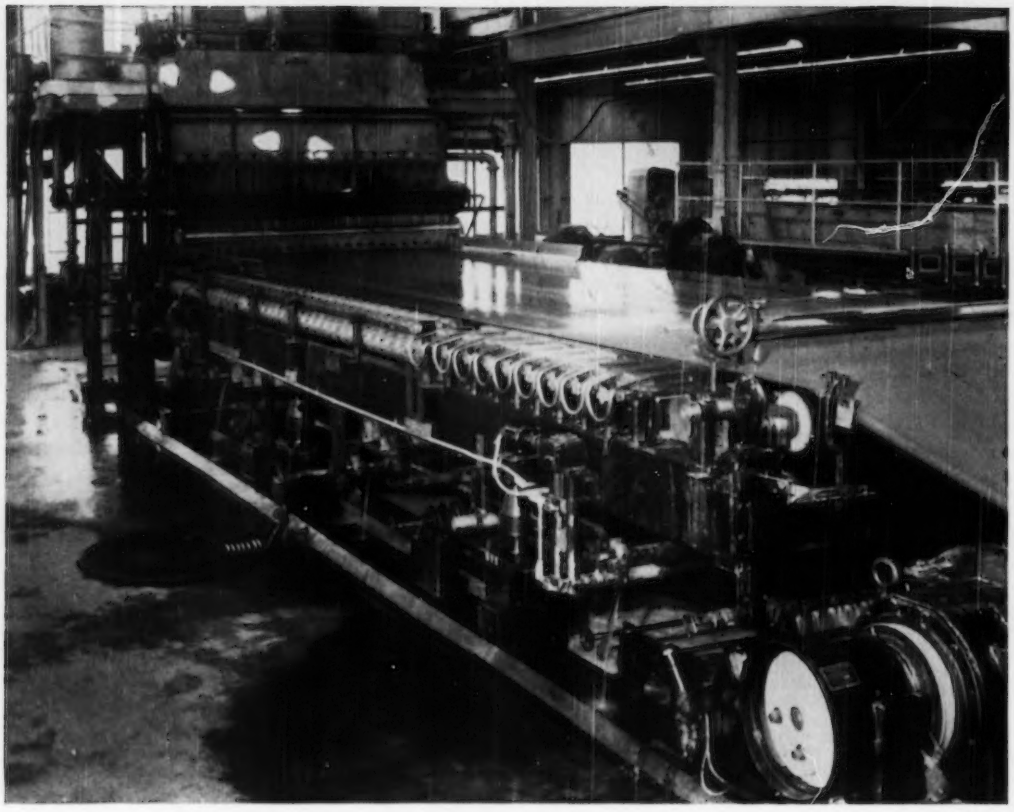
"I like the dreams of the future better than the history of the past."
JEFFERSON

Impressive as the development of Pulp and Paper has been, new horizons of achievement stretch unending before the industry.

Initiative, ideas and ingenuity will continue to be dominant factors in expanding the American economy, with woodpulp always playing a vital role.

Our own background of 64 years' association with the industry can be a valuable guide to old friends and new.

**GOTTESMAN & COMPANY**
— INCORPORATED —
22 EAST 40th STREET • NEW YORK 16, N. Y.
EUROPEAN OFFICES: Birger Jarlsgatan 8, Stockholm, Sweden



# A Stainless Steel Fourdrinier with Built-in Versatility

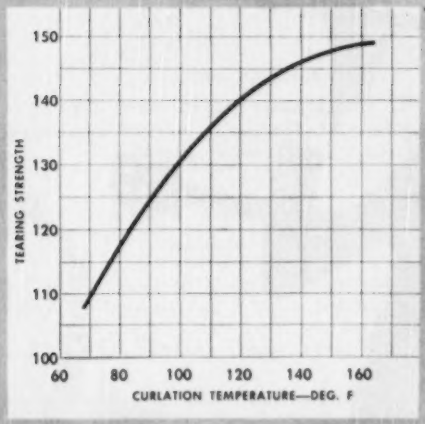
Few machines ever contained as many new designs or special features to meet exacting modern requirements as the new Downingtown Stainless Steel Cantilevered Fourdrinier now making .009 corrugating at the expanded and modernized mill of Sonoco Products Co., Hartsville, S. C. This Fourdrinier, with a wire 144 inches by 92 feet and speed range of 150 to 1500 FPM, is designed to produce 100 tons of .009 container board daily. There are nine stainless steel flat suction boxes, suction couch roll with double suction box opening, a stainless steel head box with five point stock inlet, several passes to even the flow, two stainless steel distributing rolls, a foam shower, and both high and low speed stainless steel slices. Plus these other exclusive Downingtown features—easy wire changing, new level adjustment while running, new type shake rails, modern multiple shake mechanism, balanced wire rolls, new motor-operated stretchers, new permanent piping, no connections to break when changing wire and new corrugated stainless steel save-alls. This is versatility and perfection in paper machine manufacture! And here's conclusive proof: The machine produced saleable paper on the first roll! For the best in Fourdrinier and board machines and auxiliaries, consult Downingtown.

**DOWNINGTON MANUFACTURING COMPANY**

**DOWNINGTON, PA.**

DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY SINCE 1880

## TEAR CURVE




***Effect of Temperature During Curlation Using Power Consumption of 2.5 H. P. Days Per A.D. Ton on the Properties of***
**PREVIOUSLY UNDRIED NORTHERN UNBLEACHED SULPHITE PULP**

## TEST DATA

| TEMPERATURE OF CURLATION °F | RAW* | 70 | 120 | 160 |
|---|---|---|---|---|
| FREENESS | 835 | 835 | 845 | 856 |
| MULLEN | 70.8 | 62.1 | 52.6 | 37.8 |
| TEAR | 95 | 109 | 140 | 149 |
| DENSOMETER | 14.0 | 3.7 | 1.2 | 0.7 |

*WITHOUT CURLATION

NOTE: Description of the testing procedures employed by The Curlator Corporation laboratory will be provided upon request.

**The CURLATOR† is a tool for altering the properties of pulp and paper to obtain qualities hitherto unachievable by mechanical means. The effects of CURLATION are controllable over a wide range by conditions of treatment. They vary with the raw material and may be described only in relation to a particular pulp.**

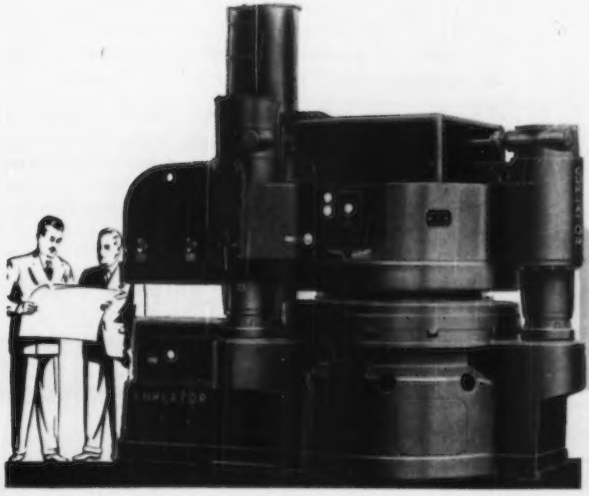
# MAY CURLATION SOLVE YOUR PROBLEM?

CURLATION is a fully tested and thoroughly proved mechanical process. It not only produces a permanent change in the shape of pulp fibres, but also exerts a powerful de-shiving action, with negligible change in freeness.

The effects obtainable with CURLATION vary widely with the raw material and the conditions of treatment. In general, CURLATION tends to produce an easier beating pulp from which water is more easily removed.

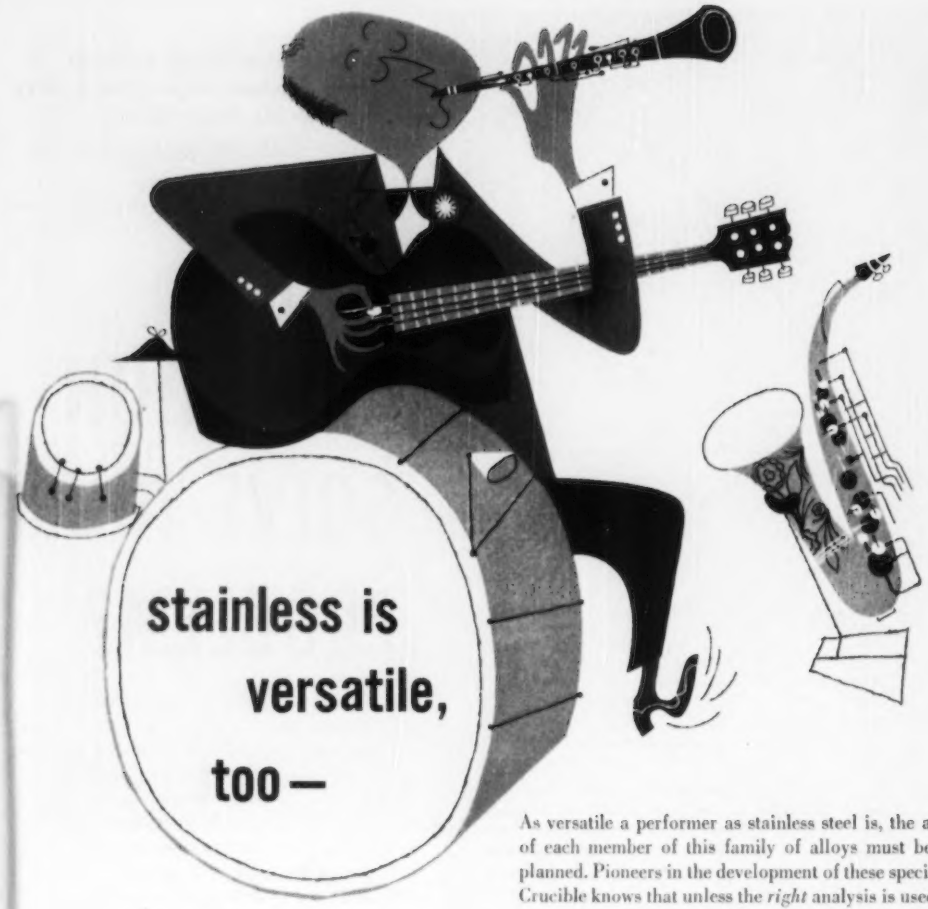
Sheets of CURLATED pulp exhibit a more even textured matte appearance. In addition, the range of qualities obtainable from a given pulp is broadened.

Other important advantages exist. Your inquiries are invited.



**CURLATOR†**
*Corporation*
565 BLOSSOM ROAD · ROCHESTER 10, NEW YORK

†T. M. Reg.—Curlator Corporation, Rochester, N. Y.




As versatile a performer as stainless steel is, the application of each member of this family of alloys must be carefully planned. Pioneers in the development of these specialty steels, Crucible knows that unless the *right* analysis is used, stainless may prove disappointing. That's why Crucible offers you the services of an alert staff of metallurgists and engineers to help you apply stainless . . . properly. These engineers and metallurgists have all the wealth of experience that Crucible's half century of specialty steel leadership provides . . . take full advantage of it.

Whatever your stainless application may be, Crucible is prepared to help you. Whether the order is in pounds or tons, Crucible tackles every industry-posed problem with a keen devotion to detail. If you're thinking of stainless . . . call in Crucible. CRUCIBLE STEEL COMPANY OF AMERICA, Chrysler Building, New York 17, N. Y.

**CRUCIBLE** first name in special purpose steels

**STAINLESS STEELS**

*fifty years of* Fine *steelmaking*

STAINLESS • HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

HENRY J. PERRY
Editor

E. P. McGINN
Industrial Editor

# Paper TRADE JOURNAL

R. E. THUEMMES
Managing Editor

E. P. NUTTALL
Associate Editor

PUBLISHED EVERY THURSDAY

LOCKWOOD TRADE JOURNAL CO., INC., 15 West Forty-Seventh Street, New York 19

GEORGE E. LOCKWOOD
President and Treasurer

ARTHUR E. GORDON
Vice-President

FREDERICK E. WINKLER
Secretary

Phone: PLaza 7-2370

**VOL. 130** **JUNE 15, 1950** **NO. 24**

## FEATURES

| | Page |
|---|---|
| Weston Succeeds Craigie As Secretary-Treasurer of Superintendents Assn. | 55 |
| 31st Annual Convention—American Pulp & Paper Mill Superintendents Assn. | 56 |
| New York Pulp and Paper Manufacturers Organize Stream Improvement Activities | 66 |
| Some Hopeful Experiments in Industrial and Community Relations | 68 |
| Maintenance of Anti-Friction Bearings | 74 |
| Development of the Hydraclone | 76 |
| What We Have Learned About Diesel Engines | 83 |
| Filtration and Papermaking | 87 |
| Wood Room Losses and Their Control | 92 |
| Utilization of Weather Information by the Pulp and Paper Industry | 94 |
| Is It Always the Paper? | 98 |
| Mill Painting and its Relation to Mill Maintenance | 102 |
| Effect of Fiber-Size Distribution | 106 |
| Limitations of Ink Adjustments to Paper | 118 |
| Fines in the Paper Machine Furnish | 122 |
| A Joint Responsibility For Industry And The Chamber Of Commerce | 126 |
| Paper Industry In India Facts At A Glance | 134 |

## DEPARTMENTS

| | Page | | Page |
|---|---|---|---|
| Trends | 51 | Merchants | 140 |
| Our Business | 53 | Prices | 142 |
| News of the Week | 55 | Materials | 143 |
| Mill News | 62 | Imports | 143 |
| Industrial Section | 76 | New Literature | 145 |
| Patent Abstracts | 130 | Obituaries | 146 |
| Suppliers | 138 | Production Ratio Report | 146 |
| Converters | 138 | Index to Advertisers | 70 |
| Financial Record | 140 | Classified Advertising | 158 |

## DATES TO REMEMBER

*JUNE 23-24:* Joint N. E.-Maine-N. H. TAPPI, Wentworth by the Sea, N. H.

*JUNE 26-28:* New England Industrial Wastes ing, Thousand Islands Club, Wellesley Island, N. Y.

*JUNE 26-28:* New England Industrial Wastes Conference, Massachusetts Institute of Technology, Cambridge, Mass.

*JUNE 25-29:* Forest Products Research Society, Annual Meeting, Portland, Ore.

*JUNE 26-30:* American Society for Testing Materials, 53rd Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

*SEPTEMBER 5-9:* Sixth National Chemical Exposition, Chicago Section, American Chemical Society, Chicago Coliseum, Chicago, Ill.

*SEPTEMBER 11-23:* 6th Educational Graphic Arts Exposition, International Amphitheatre, Chicago, Ill.

*SEPTEMBER 14-17:* American Pulp & Paper Mills Supts. Convention, Ottawa, Ont., Canada.

*OCTOBER 2-5:* Fifth Engineering Conference of the Pulp and Paper Industry, Netherland Plaza Hotel, Cincinnati, Ohio.

*DECEMBER 3-6:* American Institute of Chemical Engineers, Annual Meeting, Neal House, Columbus, Ohio.

## THIS WEEK

Complete Report of the Annual Meeting of the American Pulp & Paper Mill Superintendent's Assn., Edgewater Beach, Hotel Chicago, June 8-10.

## NEXT WEEK

The Use of Disc Refiners in the Sulfite Mill by L. E. Eberhardt.

Who Buys? by Henry J. Perry.

Use of Polyethyline as a Paper Coating by L. M. Burgess.

***Subscriptions***

**Payable in advance.**

**Single Copy 15c**

**U. S. $5.00 per year**

**U. S. Possessions $7.00 per year**

**Canada $7.00 per year—Canadian Funds acceptable**

**Latin American Countries $15.00 per year**

**All Other Countries $20.00 per year**

Entered as Second Class matter at the post office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 N. Crystal St., East Stroudsburg, Pa. Printed in U.S.A. Copyright 1950 by Lockwood Trade Journal Co. Inc. PAPER established Feb. 17, 1899, combined with PAPER TRADE JOURNAL, Nov. 18, 1899. PAPER established Sept. 21, 1910, combined with PAPER TRADE JOURNAL, February 19, 1926. All rights to the above titles reserved. Contents of PAPER TRADE JOURNAL including all articles, illustrations, etc., are copyrighted and may not be reprinted except by permission. PAPER TRADE JOURNAL is indexed in Industrial Arts Index and Engineering Index. Also publisher of LOCKWOOD'S Annual DIRECTORY OF THE PAPER AND ALLIED TRADES.

*...then there was the day that*

# the postman brought us $20,000!

It wasn't in the form of greenbacks or a check but it was worth at least $20,000 a year to us. The day it arrived it began putting that amount of money in the bank for us. It was just a little booklet that showed us how we were blowing hundreds of dollars a day up through the stacks on our mill. A check-up from our own costs proved it was so and we took action—but quick—that day. We placed an order for a Briner Economizer to recover waste heat. Its cost? Nothing—the way we figure it, for it will soon pay for itself. Not only that but it will make it possible to get big additional savings in our water heating costs. What we're trying to figure now is how many Briner Economizers we have really paid for in our high steam costs over the years. Anyway, from now on we turn hidden waste into an annual profit item—a $20,000 item.

How you can secure added profit from hidden waste is explained in this booklet. Write for copy. No obligation.

ROSS SYSTEMS

## J. O. ROSS ENGINEERING CORPORATION

MANUFACTURERS OF AIR PROCESSING SYSTEMS

**350 MADISON AVENUE NEW YORK 17, N. Y.**

201 N. Wells Street, CHICAGO 6 • 79 Milk Street, BOSTON 9 • 9225 Grand River Avenue, DETROIT 4 • 600 St. Paul Avenue, LOS ANGELES 17
ROSS ENGINEERING OF CANADA, LIMITED, MONTREAL 32, CANADA • CARRIER-ROSS ENGINEERING COMPANY, LIMITED, LONDON, ENGLAND

PULP WOOD
TO COLORED PAPER
Rely on National Aniline
Technical Service
for development of economical color formulae to suit the use requirements of the types of paper and board desired.
for assistance in duplicating our laboratory formulations efficiently in the mill.

For the best dyes
backed by National service,
write, wire or phone our nearest office.

National Aniline PAPER DYES

NATIONAL ANILINE DIVISION
Allied Chemical and Dye Corporation
40 Rector Street, New York 6, N. Y.

BOSTON • PROVIDENCE • PHILADELPHIA • CHICAGO • SAN FRANCISCO • PORTLAND, ORE
GREENSBORO • CHARLOTTE • ATLANTA • NEW ORLEANS • CHATTANOOGA • TORONTO

# *A turbine oil*

# SINCLAIR

Cats seem to live a charmed life. And in many ways so do Sinclair SINTURLITE Oils! You'd expect the grueling conditions of turbine service to cut short the life of any oil. But SINTURLITE is different! Not just for months—but for years—SINTURLITE keeps right on lubricating efficiently . . . resisting oxidation, retarding sludge formation, preventing rust, separating readily from water. Long serv-
RESISTS OXIDATION
PREVENTS RUST
For lubrication counsel, see your nearest Supplier of Sinclair Products or write to Sinclair Refining Company, 630 Fifth Avenue, New York 20, N. Y.
SINCLAIR

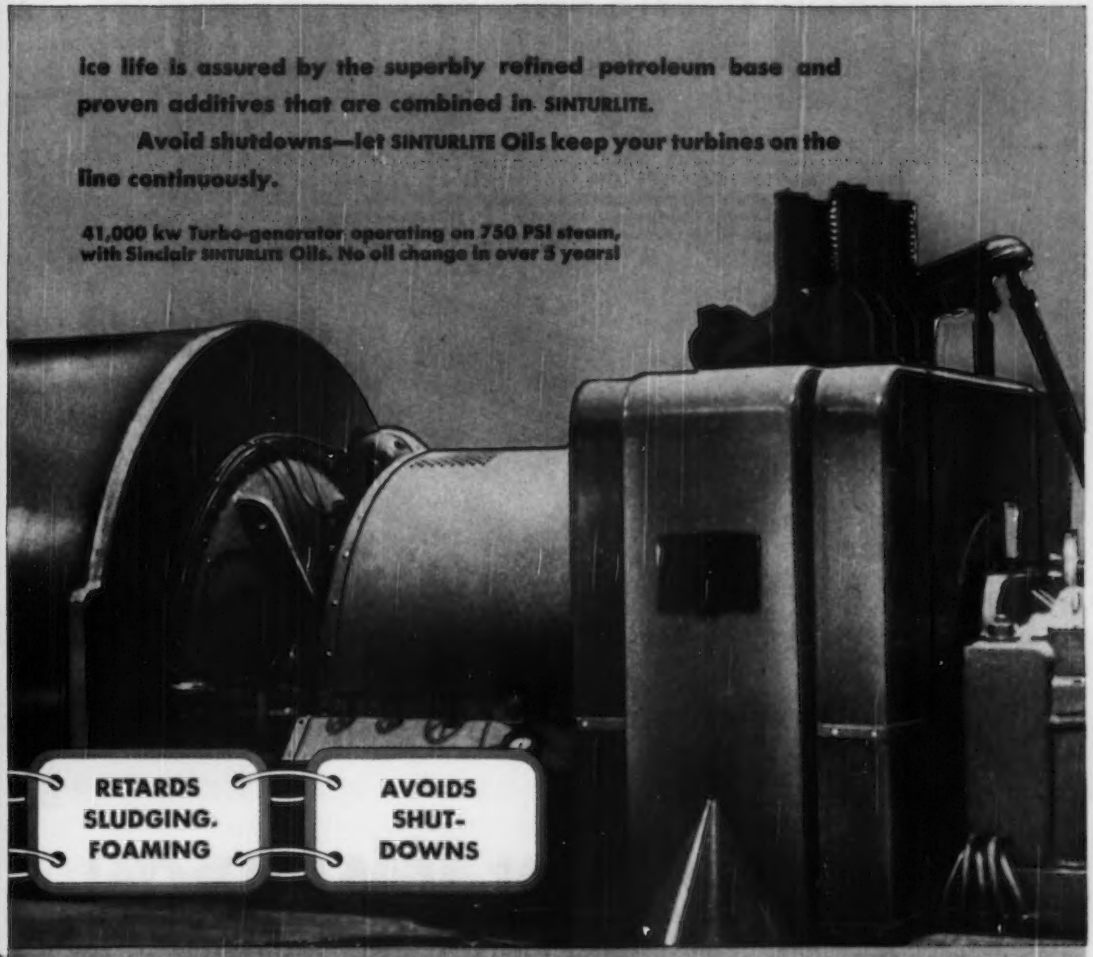
*with nine lives...*

# SINTURLITE

ice life is assured by the superbly refined petroleum base and proven additives that are combined in SINTURLITE.

Avoid shutdowns—let SINTURLITE Oils keep your turbines on the line continuously.

41,000 kw Turbo-generator operating on 750 PSI steam, with Sinclair SINTURLITE Oils. No oil change in over 5 years!




## INDUSTRIAL OILS

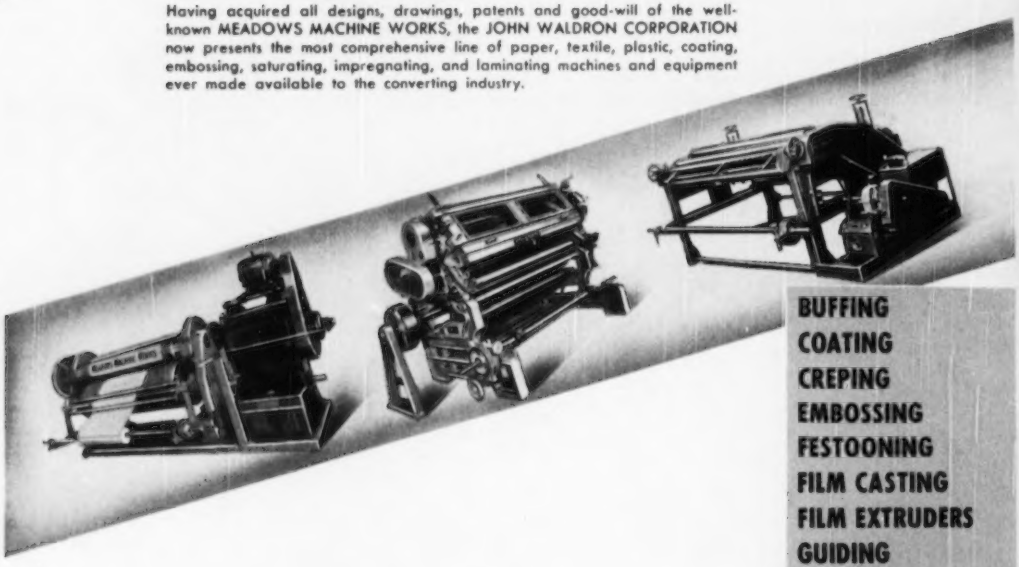
# Announcing.... a greatly

## MEADOWS MACHINE DIVISION OF THE

# JOHN WALDRON CORPORATION

*Leaders In Web Process Engineering Since 1827*

Having acquired all designs, drawings, patents and good-will of the well-known MEADOWS MACHINE WORKS, the JOHN WALDRON CORPORATION now presents the most comprehensive line of paper, textile, plastic, coating, embossing, saturating, impregnating, and laminating machines and equipment ever made available to the converting industry.



**BUFFING**
**COATING**
**CREPING**
**EMBOSSING**
**FESTOONING**
**FILM CASTING**
**FILM EXTRUDERS**
**GUIDING**
**GUMMING**
**IMPREGNATING**

**WALDRON DIVISION**

# JOHN WALDRON

***Main Office and Works***

# *expanded service for converters*

**INSPECTING**
**LAMINATING**
**PRINTING**
**REELING**
**REWINDING**
**SATURATING**
**SLITTING**
**VARNISHING**
**WAXING**
**WINDING**

To better provide the converting industry with exactly the right machine for a specific purpose, the long-famous WALDRON line of HEVI-DUTY machines is now augmented by the highly reputable MEADOWS line of MEDIUM DUTY machines. "Packaged Units" of medium and heavy duty types will be featured. The machine types and designs now incorporated in the new WALDRON-MEADOWS lines cover the entire range of machine requirements for all converting plants and processes—from the largest to the smallest—for any kind of converting operation on paper, fabric, plastic, foil or film, for working with organosols and plastisols—for meeting any production schedule.

A notable combination of machine designing and building talents and experience coupled with the finest facilities for research, development, engineering and manufacturing to provide the utmost in service to a fast growing industry and to the thousands of users of WALDRON and MEADOWS machines.

Sales and service of both WALDRON and Meadows machines will be handled from the New Brunswick plant.

# CORPORATION

**MEADOWS DIVISION**

***New Brunswick, N. J.***

# Bronze, Iron, Steel and Corrosion-Resisting Valves-

## POWELL MAKES THEM ALL!

Fig. 1708 — 200-pound Bronze Globe Valve with screwed ends, union bonnet, renewable, specially heat treated stainless steel seat and regrindable, renewable "Powellium" nickel-bronze disc.

Fig. 2433 — 150 - pound Bronze Regrinding Swing Check Valve. Flanged ends and bolted flanged cap. Disc has ample lift to permit full, straightway, unobstructed flow through the valve body.

**When you come to ONE SOURCE, you simplify your valve buying—and stocking of spare valves and parts—for your entire flow control system.**

Powell Bronze, Iron, and Steel Valves are second to none in giving long, trouble-free service. And when it comes to Special Design and Alloy Valves for Corrosion Resistance, Powell is the acknowledged leader. In fact, Powell makes the *only* COMPLETE line of these valves available to Industry today.

Fig. 1793 — Large 125-pound Iron Body Bronze Mounted Gate Valve. Flanged ends, bolted flanged yoke, outside screw rising stem and tapered solid wedge. Also available in All Iron.

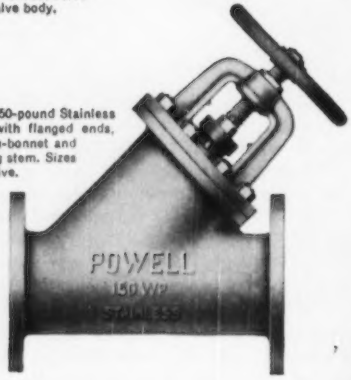



Fig. 1944—Large 150-pound Stainless Steel "Y" Valve with flanged ends, bolted flanged yoke-bonnet and outside screw rising stem. Sizes 2½" to 12", inclusive.

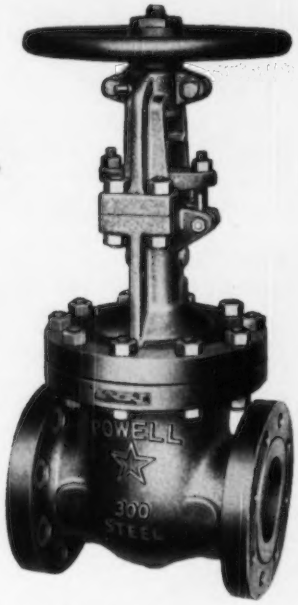



Fig. 3003—Class 300-pound Cast Steel Gate Valve with flanged ends, outside screw rising stem, bolted flanged yoke and tapered solid wedge.

**The Complete Powell Line includes Globe, Angle, "Y", Gate, Check, Non-return, Relief and Flush Bottom Tank Valves in Bronze, Iron, Steel and a wide range of Corrosion-resistant metals and alloys.**

**Ask your nearest Distributor—or write direct**

**The Wm. Powell Co., Cincinnati 22, Ohio**

**DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES**

# POWELL VALVES

# —a defoamer in handy 2½-lb. bricks!

Now you can buy your defoamer in easy-to-handle, easy-to-use bricks! No waste! No mess! No heavy drums to handle or ship back! Bricks quickly dissolve in water. One 2½-lb. brick of Defoamer 4* makes 40 gallons. Try this new, low-cost Hercules product today at our expense, and be convinced of its convenience and economy. Send for free sample brick.

*HERCULES POWDER COMPANY 962 King St., Wilmington 99, Delaware*

## *HERCULES*

SIZING MATERIALS AND CHEMICALS FOR PAPER

—NO DRUMS TO HANDLE

—EASY TO USE, EASY TO STORE

—ONE BRICK MAKES 40 GALLONS

—FREE SAMPLE BRICK ON REQUEST

*PAT. APPLIED FOR

PP50-3

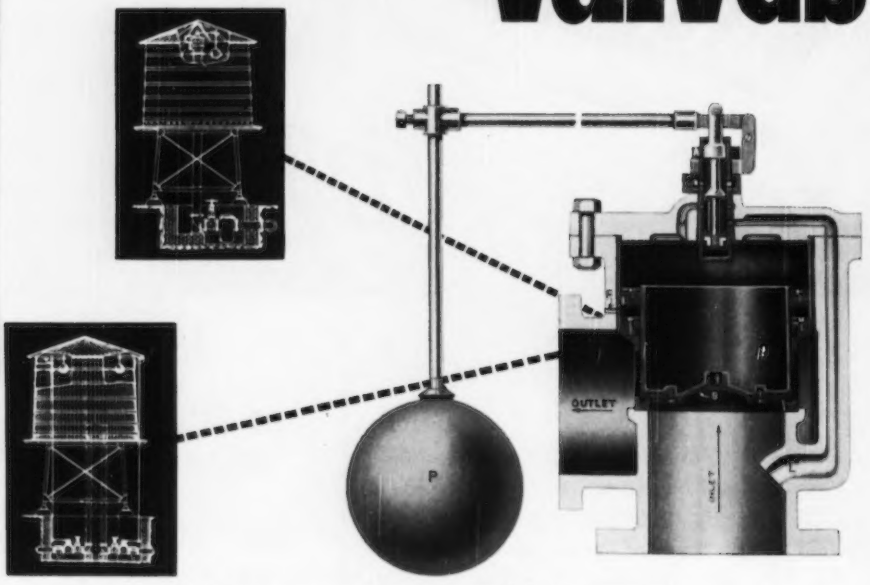
**FOR POSITIVE WATER LEVEL CONTROL**

***under the most difficult, adverse conditions***

***specify***

**GOLDEN-ANDERSON**

# "Cushioned" FLOAT OPERATED control Valves




Golden-Anderson engineers have pioneered the development of float operated valves for cold and hot water requirements in elevated tanks. These valves are the quick opening type or semi-throttling design, and arranged with either integral or remote pilot control for differential water level operation.

*Write for complete technical data.*

LIFE AND PROPERTY PROTECTION
**VALVES**
FOR OVER 50 YEARS

**GOLDEN-ANDERSON *Valve* SPECIALTY CO.**

**2089 KEENAN BUILDING**
**PITTSBURGH 22, PA.**

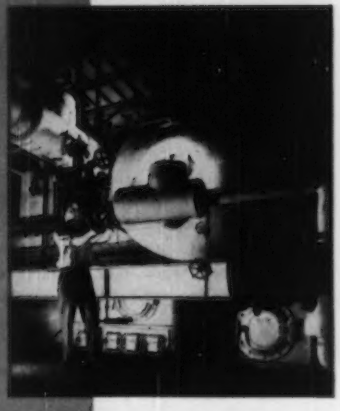
# 15,690 TONS

## of chemical recovery capacity WITH 102 B&W UNITS IN 18 STATES

From Florida to Washington — from California to Maine — B&W Recovery Units serve the nation's vast wood-pulping industry.

Having a rated fuel capacity totaling almost 50 million pounds of dry solids per day, these B&W units efficiently recover heat and chemicals from waste liquors in kraft, soda, and magnesium bisulphite pulping processes. Since World War II, 31 units have been installed (or ordered), with an average steam capacity of 90,860 pounds per hour.

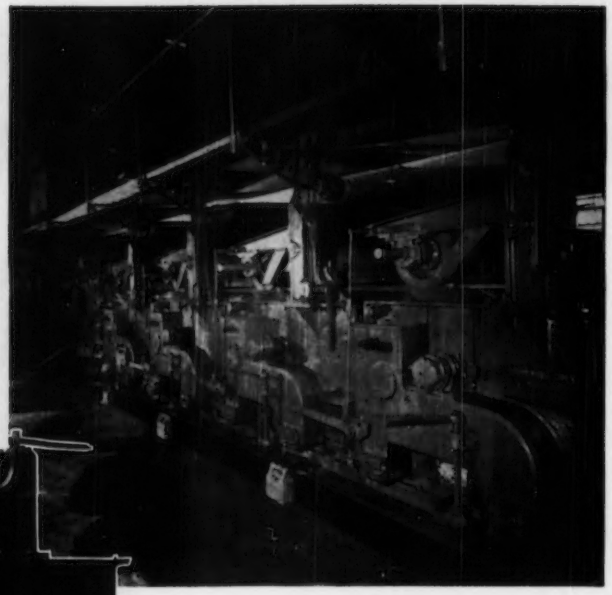
The performance of these units is proof that B&W has figured prominently as a pioneer in modern recovery techniques for the pulp and paper industry.

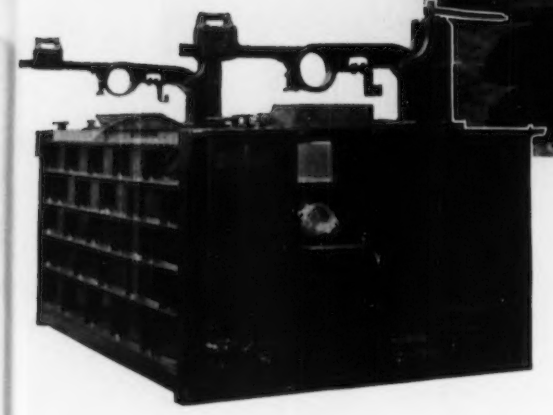


BABCOCK & WILCOX

P-53

# PROFLOW* and CONFLOW* Vats





## FOR DAY-TO-DAY ASSURANCE OF

*WELL-FORMED SHEET*
*UNIFORM WEIGHT*
*UNIFORM CALIPER*

Downingtown PROFLOW and CONFLOW vats for cylinder machines have distinctive approach flow and stock inlet features engineered and designed to assure you of a well-formed sheet of uniform weight and caliper, day-in and day-out. Both the PROFLOW vats (in which stock flow is "with" the rotation of the cylinder mould) and CONFLOW vats (in which stock flow is opposite to rotation of cylinder mould) have these and other design features: Adjustable Making Board, Special Constant Tension Chime Ring Sealing Straps designed to prevent leakage between the cylinder mould and vat end rings with a minimum of friction, Anti-friction Bearing Mounting for both Couch Roll and Cylinder Mould, and ample Clean-out facilities. Adjustable Overflow and Adjustable Wing Boards and Auxiliary Wings are provided where required. Both types are made of (a) All welded stainless steel, (b) Cast iron ends with wood body plain or metal lined, (c) All cast iron with bronze, stainless steel or Monel metal circle. P.S. Use a Downingtown Suction Slice to remove the water from the mould nip. Write for more information about these and other Downingtown vats that have been "proved by performance" on cylinder machines making a wide variety of paper and board.

*TRADEMARK

**DOWNINGTOWN MANUFACTURING COMPANY**

**DOWNINGTOWN, PA.**

**DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY SINCE 1880**

# 6 REASONS

## for choosing the New Low-Cost RELIANCE ELECTRIC TRANSMISSION

**STARTS** without clutches!

**STOPS** without mechanical brakes or clutches!

**REVERSES** without use of gears or clutches!

**SPEED ADJUSTMENTS** without mechanical transmissions or change of gears!

**JOGGING, INCHING, CREEPING** without slipping clutches!

**LOW COST**—a price any plant can afford!

**RELIANCE V★S DRIVE**

The new low-cost Reliance V★S Drive (¾ to 2 hp.) performs all the functions of mechanical transmissions—electrically! Operating from A-c. circuits, it is the ideal choice for printing presses, paper winders and slitters, packaging machines, industrial food mixers, machine tools, conveyors and many other types of equipment. Write today for Bulletin D-2101 which gives further details.

***Sales Representatives in Principal Cities***

**RELIANCE ELECTRIC AND ENGINEERING CO.**

"Motor-Drive is More Than Power" • 1977 Ivanhoe Road, Cleveland 10, Ohio

In
beater-pigmented papers...
TITANOX-A-WD
works BEST where needed MOST
The lower the initial opacity the more efficiently TITANOX-A-WD increases the opacity of beater-pigmented papers.
For example, the addition of 1% TITANOX-A-WD increases the opacity of a 50% paper by 10%; 3% TITANOX-A-WD raises opacity by 19.5%; and 6% TITANOX-A-WD boosts opacity 27%. On the other hand a paper with 90% initial opacity can have its opacity increased 6.5% by the addition of 6% TITANOX-A-WD.
TITANOX-A-WD improves the quality of beater-pigmented papers by imparting high opacity at low loadings, promoting lasting brightness and maintaining strength. Moreover, the low water absorption of TITANOX-A-WD makes possible such ease of mixing that you save on production costs.
Our Technical Service Laboratory is available to help you improve your paper with TITANOX-A-WD. Write or phone today to our nearest office. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; 104 South Michigan Avenue, Chicago 3, Ill.; 2600 South Eastern Avenue, Los Angeles 22, Calif.
Branches in all other principal cities.
TITANOX
the brightest name in pigments
TITANIUM PIGMENT CORPORATION
Subsidiary of NATIONAL LEAD COMPANY

# TEAR OUT

## PASTE ON LETTERHEAD AND MAIL TODAY!

**Paisley Products, Inc.**
**1770 Canalport Ave., Chicago 16, Ill.**

Gentlemen: We are interested in Paisley SCIENTIFIC Adhesives. Please send me at once, without cost or obligation, the Laboratory Reports and Data Sheet indicated below:

***SET-UP BOXES***

- ☐ Flatack Non-Warp Glue
- ☐ #3354 Cake Form Non-Warp Glue
- ☐ #6590 Non-Tarnish Non-Warp Glue (Silverware Boxes)
- ☐ #114 Stripping Glue
- ☐ #1707 Combining Cement

***FOLDING BOXES***

- ☐ #7692 Folding Box Glue
- ☐ #1023 Fast Set Glue
- ☐ #2007 Water Resistant Cement
- ☐ #2010 Wax Carton Glue
- ☐ #4199 Brightwood Resin Glue (for Waxed Stock)
- ☐ #3740 MST Cellophane Windows
- ☐ #3440 Acetate Window Adhesive
- ☐ #7528 Cartonite Glue
- ☐ Paisley Liquid Spray for Offset Prevention

***PAPER CONVERTERS' ITEMS***

- ☐ #773 Water and Grease Resistant Tube Glue
- ☐ #951 for Splicing Paper Rolls
- ☐ #1704 for General Industrial Combining
- ☐ #1706—for General Industrial Combining
- ☐ #2012 Waxed, Acetate and Foil Laminated Stocks
- ☐ #3122 Pyroxylin Coated Cloth and Paper
- ☐ #3199 Asphalt Coated Papers
- ☐ #3267 Water Resistant Paper Work
- ☐ #3408 Coated Paper and Pliofilm
- ☐ #3420 Waxed-Glassine Papers
- ☐ #3424 Waxed-Glassine Papers
- ☐ #3740 M.P. Cellophane Windows
- ☐ #3908 Bag Seams
- ☐ #4050 Gluing Off in Book Binding
- ☐ #4367 Water Resistant Tube Glue
- ☐ #6310 Aluminum Foil Lamination
- ☐ #6323 Pliofilm Adhesive
- ☐ #7058 All Purpose Cement
- ☐ #7508 Spot Label Gum
- ☐ ADHESIVE OPERATION DATA SHEET

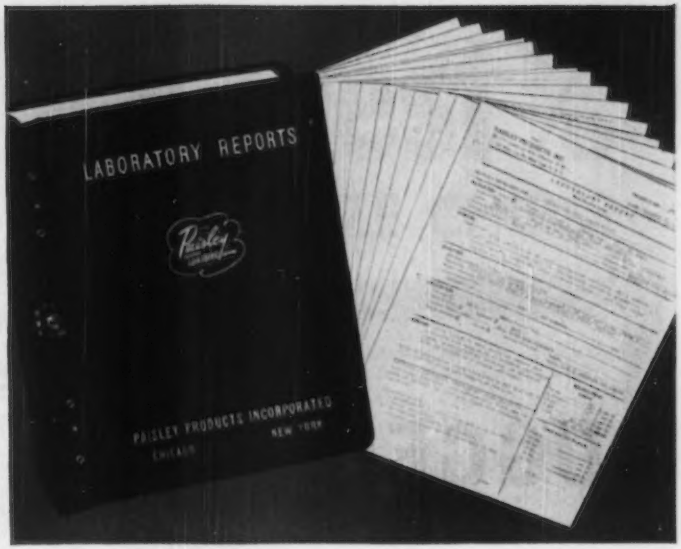
(You fill in and return for Laboratory Recommendation)

FIRM_____

STREET_____

CITY_____ STATE_____

BUYER_____




# FOR THOSE *HARD-TO-GLUE* JOBS..

## Paisley SCIENTIFIC Adhesives Glues . . Pastes . . Resin Emulsions

THERE isn't a single adhesive operation in your plant that can't be done quicker, more efficiently, and perhaps at lower cost, with a Paisley *Scientific* Adhesive! Regardless of the *type* of materials to be bonded, the *method* of application, or the setting speed required, Paisley can supply the ONE *best* Adhesive for the job. Get all the facts about Paisley *Scientific* Adhesives. Check the coupon for the free Laboratory Reports in which you are interested. Or, send today for our Adhesive Operation Data Sheet.

**FREE CONSULTING SERVICE**

*There's a laboratory-developed, tested and controlled PAISLEY scientifically designed Adhesive for every fabricating, manufacturing, product labeling and sealing operation.* Buy your Adhesives the scientific way. *Send for an Adhesive Operation Data Sheet. Fill in and return it to our laboratory for analysis and recommendations. Write today. There's NO obligation.*

Paisley SCIENTIFIC ADHESIVE SERVICE

# PAISLEY PRODUCTS INCORPORATED

1770 CANALPORT AVENUE, CHICAGO 16, ILL. PHONE CANAL 6-2219
630 WEST 51st STREET, NEW YORK 19, N.Y. PHONE COLUMBUS 5-2860

*Manufacturers of Glues · Pastes · Resin Adhesives · Cements and related Chemical Products*

# RUGGED!

Choose "SOLKA" for extraordinary endurance and flexibility. This pulp is the foundation of really tough ledger papers. Performance has earned "SOLKA" first position in the sturdy-paper field.

Brown Company also offers you full use of its Technical Service Division. It will help solve your difficult paper problems at any time.

MADE FROM SOLKA

This seal assures your customers a product made from high alpha pure wood cellulose. "SOLKA" is a specification-built cellulose; the best of its kind

**BROWN COMPANY** *Foremost Producers of Purified Cellulose*

**Pulp Sales Offices:**

500 Fifth Avenue, New York 18, N.Y. • 465 Congress Street, Portland 3, Maine
110 S. Dearborn Street, Chicago 3, Illinois • 58 Sutter Street, San Francisco 4, California
Brown Corporation, 906 Sun Life Bldg., Montreal 2, P.Q., Canada

# Want Highest %

## OF CLEAN, UNIFORM-SIZE CHIPS?

**Specify LOW-HEAD Chip Screens**

1. Horizontal design saves headroom and space —cuts dollar cost of installation or remodeling.

2. Screen surface tension conveniently applied by means of bolts outside screen body.

3. Mechanism is mounted above screen for easy inspection — secured in place by 8 bolts.

4. Vibrating mechanism enclosed in dust and moisture-proof housing . . . continuously splash-lubricated.

5. The 45° straight line motion stratifies bed of chips—accepted chips pass through top deck . . . oversize chips pass to rechipper.

6. All welded parts are stress-relieved. Chip screen is constructed of high-tensile strength steel alloy.

## ELIMINATE OUTAGE TIME FOR SLIVER REMOVAL

YOU GET MAXIMUM chip screen performance with the *Low-Head* screen. Unlike conventional, inclined screens, it is designed to provide *highest* percentage of uniform size chips!

And the reason is its unique vibratory motion — chips move in a single direction, on their sides. Long slivers do not turn on edge and lodge in screen openings. Full capacity is maintained at all times.

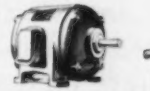
*Low-Head* screens operate horizontally — save headroom and space over inclined design screens. High tensile steel alloy construction makes unit lighter, yet stronger — saves power, lengthens life.

**A-C ALSO OFFERS *RIPL-FLO* SCREEN**

For chip screening applications where accurate sizing is not important, Allis-Chalmers offers the *Ripl-Flo* vibrating screen. This two-bearing, inclined type screen is low in initial cost . . . can be operated with minimum expense.

Contact your nearby Allis-Chalmers office for help in selecting the *correct* chip screen for your operation, or write for Bulletin 07B6353A.

**ALLIS-CHALMERS, 994A SO. 70 ST. MILWAUKEE, WIS.**


MOTORS

CENTRIFUGAL PUMPS

TEXROPE V-BELT DRIVES

ROTARY KILNS

HI-DENSITY FEEDER

STREAMBARKER

**AND OTHER EQUIPMENT FOR PAPER MAKING . . .**

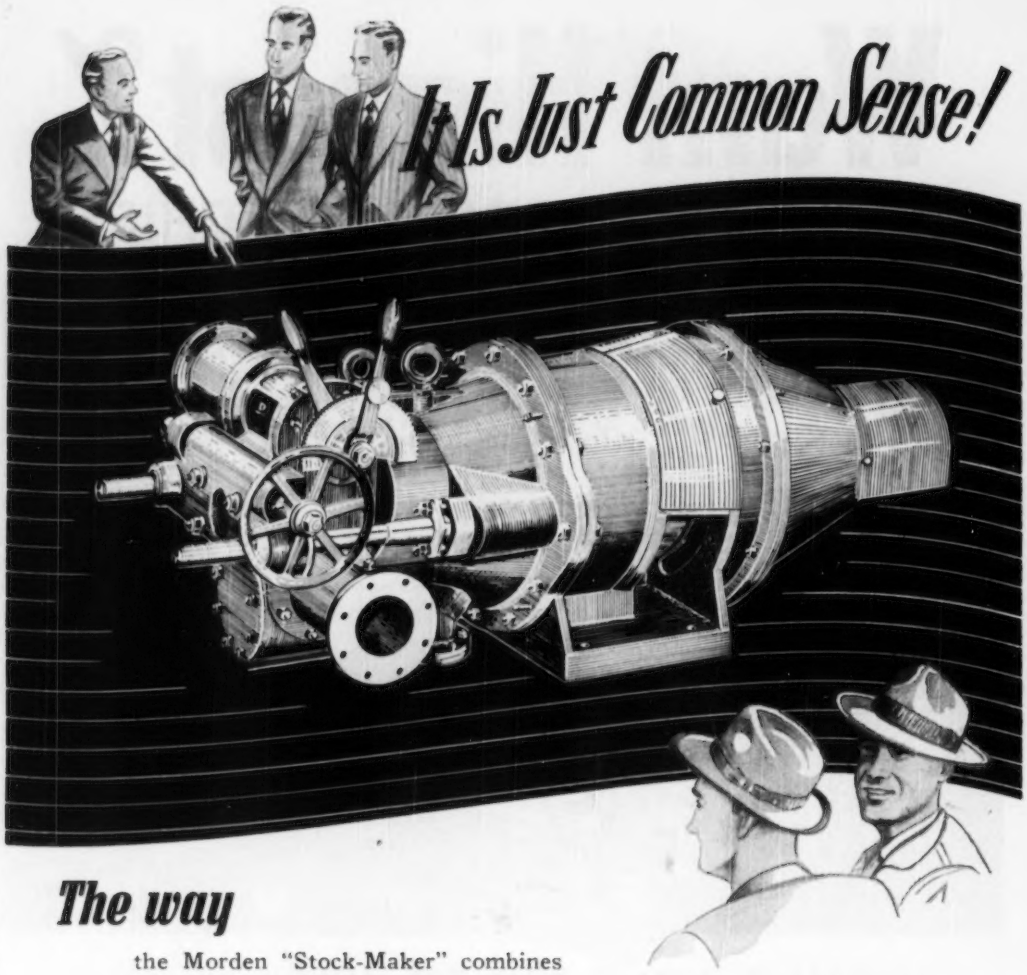
A-2948

# ALLIS-CHALMERS

A-C ALLIS-CHALMERS

*Low-Head, Ripl-Flo, Texrope, Hi-Density* and *Streambarker* are Allis-Chalmers trademarks.

# It Is Just Common Sense!



## The way

the Morden "Stock-Maker" combines beating or refining into one simple and continuous operation.

More than 350 "Stock-Makers" in over 100 mills have proven its superiority for the vast majority of stock treatment requirements.

**May we assist you in surveying "Stock-Maker's" advantages for your particular requirements?**

**MORDEN MACHINES COMPANY**
PACIFIC BUILDING • PORTLAND 4, OREGON

*in Canada*
The William Kennedy & Sons, Ltd., Owen Sound, Ontario

*in England*
Millspaugh, Limited, Sheffield

**Eastern Sales Representative: Union Machine Company, Fitchburg, Massachusetts**

WE COVER THE WATERFRONT WITH A COMPLETE LINE OF WATER-BASED MATERIALS

**LOTOL***
Compounded latices—ready to use

**KRALAC***
Plastic latices

**NITREX**
Butadiene acrylonitrile copolymer latex

**SHRINK-MASTER**
Process for rendering woolens shrink resistant and long wearing

**LATEX**
Natural and synthetic

**KANDAR***
Permanent finish for textiles

**KOLOC***
Cationic resin compositions for cotton, rayon, and wool

**NAUGATEX***
Dispersed chemical compounding ingredients for all latices

**KRALASTIC**
Flexible plastic latices

**DISPERSITE***
Aqueous dispersion of rubber, reclaimed rubber, or resins

*Reg. U. S. Pat. Off.

*New!*

# INDU-SEALZ

## RUBBER COMPOSITION AS ADDITIVE TO ASPHALT FOR LAMINATION

**5 to 30% INDU-SEALZ in your Asphalt will give you...**

- Better tear resistance
- Increased tensile strength between plies
- Increased flexibility at low temperatures
- Less bleeding at elevated temperatures

If you use asphalt in your process you cannot afford to overlook the advantages INDU-SEALZ offers as an addditive to your product.

**NAUGATUCK CHEMICAL**

*Division of United States Rubber Company*

"Headquarters for Latex, Lotols and Dispersites"

NAUGATUCK, CONNECTICUT

BRANCHES:

Akron — Chicago
Boston — New York
Los Angeles — Philadelphia
Charlotte, N. C.

Other Products of Naugatuck Chemical are:
PLASTICS • RUBBER CHEMICALS
AGRICULTURAL CHEMICALS • SYNTHETIC RUBBER

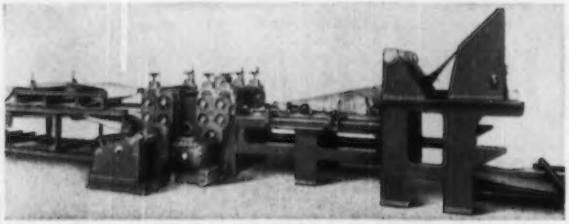
# THE SMITH & WINCHESTER MFG. CO.

PAPER MILL AND PAPER BAG MACHINERY

Plant and Offices

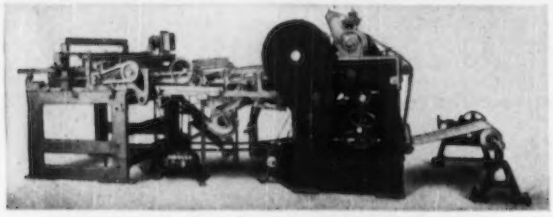
South Windham, Conn.

Modern, efficient machines for high-speed operation, large volume production and lower unit costs in the manufacture of paper and paper bags. Smith & Winchester equipment is custom-built to your specific requirements.



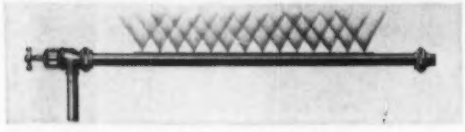
## MULTI-WALL TUBER

For the production of single and multi-wall valve notch tubes for sewed valve type bags. Machine built in 2 sizes, 20" and 26" face; tubes, 26" to 50" long.



## ROTARY SPOT CUTTER

Rotary Cutters for accurately handling large quantities of stock in finishing room. When equipped with patented photo-electric compensator, will accurately spot-cut pre-printed traveling webs. Built in 40", 50", 60", 71" and 83" widths. Layboy and stacker may be furnished.

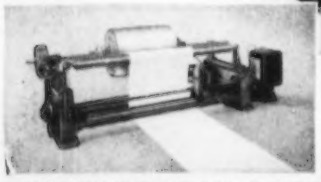


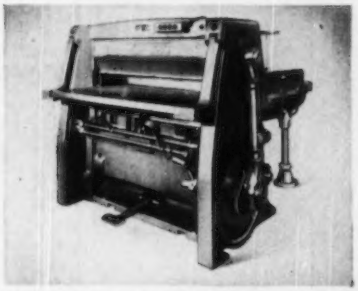
## SHOWER PIPES

The famous S & W "Rainstorm" Shower Pipe for greatest effectiveness and maximum economy.

## WEB CONTROL

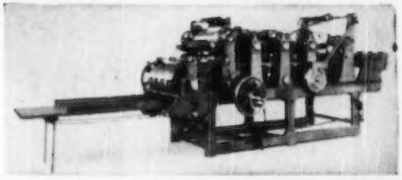
Fully automatic electric eye, side register control or web feed. Manual control can be supplied.





## MODEL "E" UNDERCUT TRIMMER

The S & W Undercut is the only undercut trimmer made. The Model "E" is newly designed for fast, effortless, accurate cutting and safe operation. Retains the outstanding features of the S & W Standard Undercut with many new features added for greater safety, accuracy and flexibility. Built in 56", 66", 76", 86" and 96" widths.



## 1/2 BBL BOTTOMER

S & W Bottomers are designed for high production and minimum spoilage with many new features for lowering bag production costs. Bottomers are made in several sizes. Produce standard satchel or narrow valve bottom.

## NO. 10 TYPE TUBER

For pasted bottom, multi-wall tubes. Used in connection with S & W Bottomers or producing standard satchel bottom or valve bag. Fully automatic or manual control for web feed.

Complete information on any of the above equipment on request.

SERVING THE PAPER AND PAPER BAG INDUSTRY SINCE 1828

**A RESEARCH CORPORATION COTTRELL**

*will save you $1000 to $1500 worth of salt cake every day*

The engineer from Research Corporation spoke confidently. He had studied the equipment layout, and noted that the mill had a capacity of 1,000 tons of pulp per day. From his experience and specialized knowledge he knew that he could safely anticipate a minimum recovery of 100 pounds of salt cake for each ton of pulp produced—total: 50 tons of salt cake per day—value: $1,000.00 to $1,500.00 per day dependent upon salt cake cost prevailing at the plant.

Performance like this is the result of over 35 years of experience combined with careful engineering appraisal, attention to details and a remarkably efficient method. These, plus equipment which gives recoveries of 90 to 99%, are responsible for outstanding records of recovery.

If you are losing your chemicals through the stack in a soda or sulphate mill investigate the Research Corporation Precipitator.

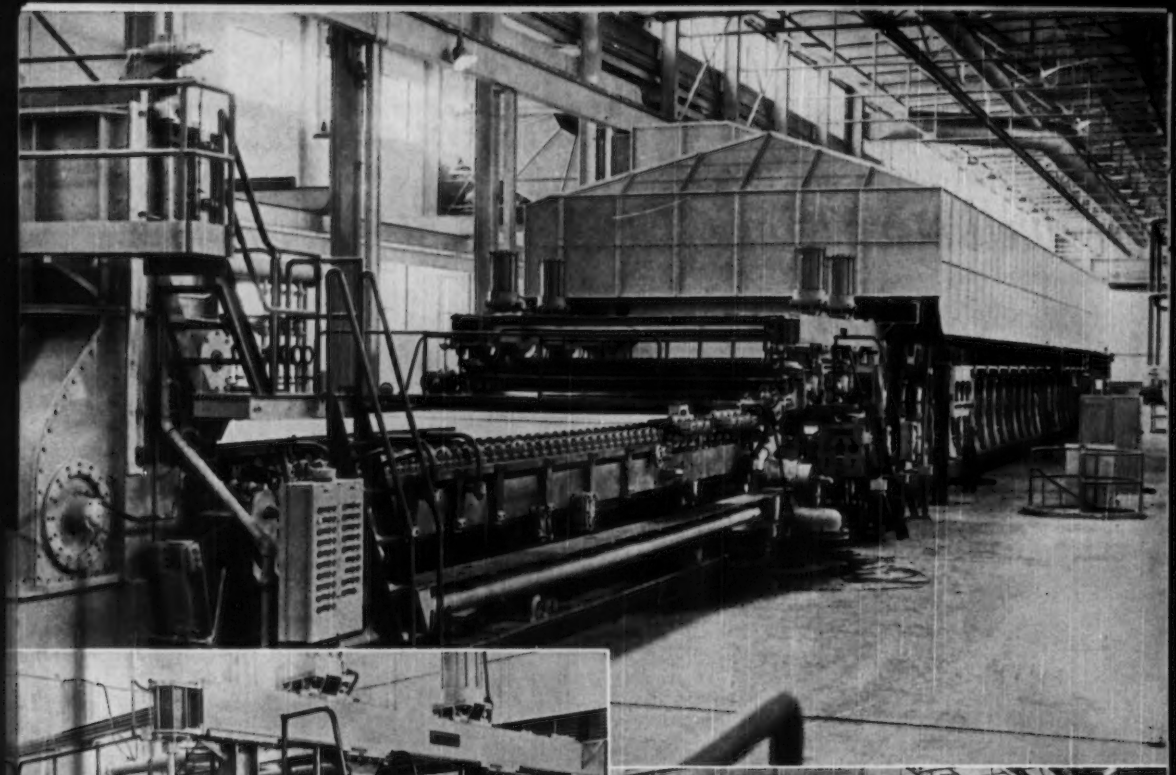
RC-108

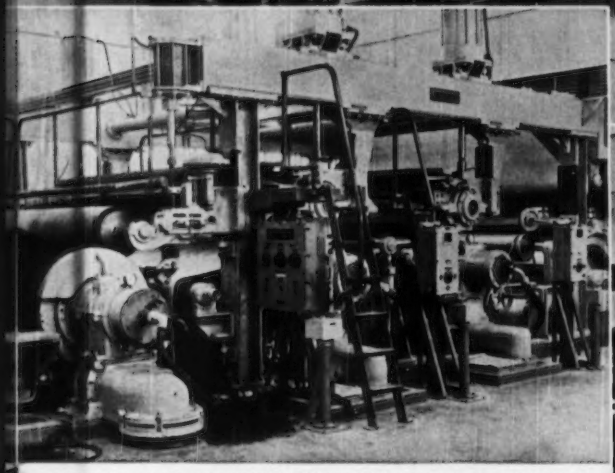
*Research Corporation Installations*

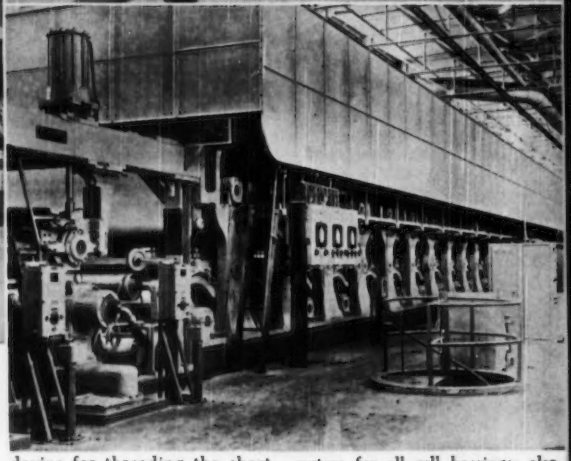
47 CARBON BLACK PLANTS
200 METALLURGICAL INSTALLATIONS
203 ACID PLANTS • 34 PAPER MILLS
262 DETARRING INSTALLATIONS
195 POWER STATIONS
71 STEEL PLANTS • 95 OIL REFINERIES
AND MISCELLANEOUS INSTALLATIONS

**RESEARCH CORPORATION**

*405 Lexington Avenue, New York 17, N. Y.*
*122 South Michigan Avenue, Chicago 3, Illinois*







## FEATURES OF 156" PUSEYJONES FOURDRINIER MACHINE AT FIBREBOARD

Improved type Flow Spreader combined with 8 ft. high head adjustable slice, all Neoprene lined.

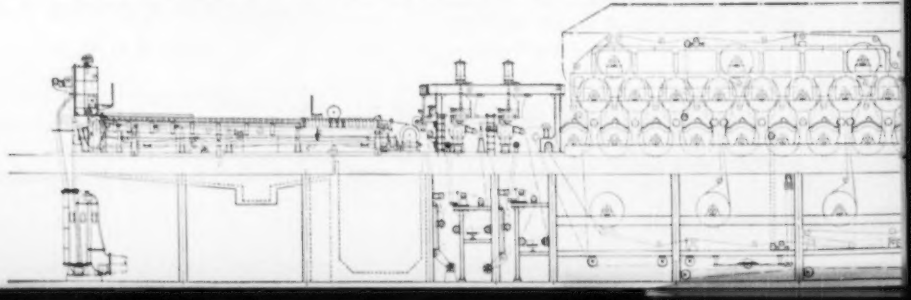
Fourdrinier Part suitable for a wire 100 ft. long and 156" wide, equipped with 36" suction couch, lump breaker roll with improved raising and lowering mechanism, 7—7" wide suction boxes, dandy roll, "Rapi-drape" wire changing device, and adjustable wire pitch arrangement.

Press Part of Simplex close-coupled design with 28" rubber covered first and second main presses and Vickery felt conditioners.

Dry Part in two main sections having one upper and lower felt on each section; first section comprises 20—60" paper and 6—60" felt dryers; second section comprises 20—60" paper and 2—60" felt dryers; Bowser lubricating system and main dryer bearings; rope carrier device for threading the sheet through the dryer sections; improved type enclosed gearing, latest type steam joints with dual revolving siphons, and automatic motor-operated felt tension control devices. Calender Stack comprising 7 rolls with independent Bowser oiling system for all roll bearings; also pneumatic nip loading system.

Pope type Uniform Speed Reel of improved design, with pneumatic adjustable loading mechanism.

Puseyjones Winder with hydraulic operated roll unloading mechanism.



Line drawing of new machine. Maximum speed is 1200 feet per minute with G.E. multiple generator type sectional electric drive.

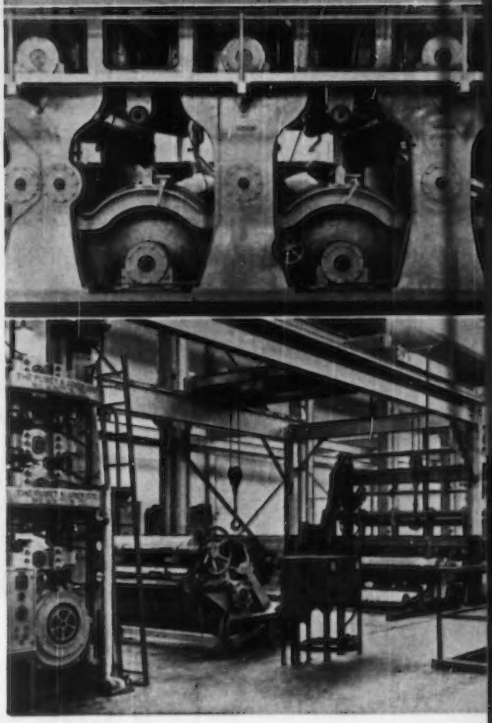
# ANOTHER FIRST FOR FIBREBOARD

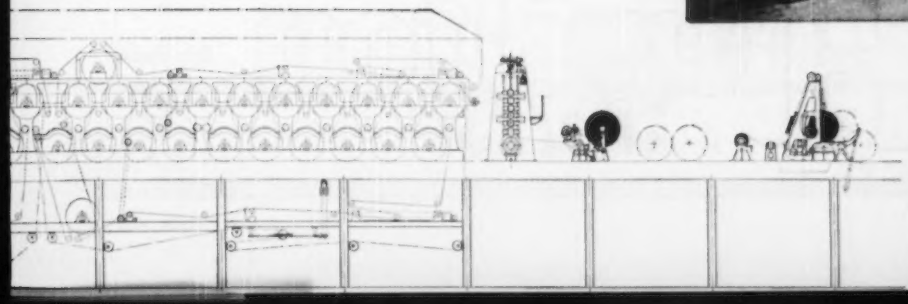
Here is the Puseyjones Fourdrinier Machine now in operation in the fine new mill of Fibreboard Products, Inc., East Antioch, California. In every detail from wet end to winder, the new machine reflects the latest developments in the papermaking art. It is producing .009 corrugating paper from furnish prepared by the latest semi-chemical process.

Whatever your papermaking problem, put it up to Puseyjones—for machines that give continuous, uniform production at high speeds.

**THE PUSEY AND JONES CORPORATION**
**Established 1848. Builders of Paper-Making Machinery**
**Wilmington 99, Delaware, U.S.A.**

THE SIGN OF TRADE MARK SUPERIOR QUALITY





All rolls in the new Puseyjones Fourdrinier Machine at Fibreboard are equipped throughout with roller bearings, with the exception of lower calender roll.

# "Smart Guy ...the Boss!"

**Tom:** Remember how the boss gave us a Hamilton Felt for this machine when every customer was hollering for more tonnage?

**Bill:** Sure do. And he got the tonnage.

**Tom:** Now everybody is calling for fine finish and he gives us two Hamilton Felts instead of one.

**Bill:** Righto! And he is getting a swell finish on both sides of every sheet, in addition to the extra tonnage.

**Tom:** Smart guy. Knows his stuff.

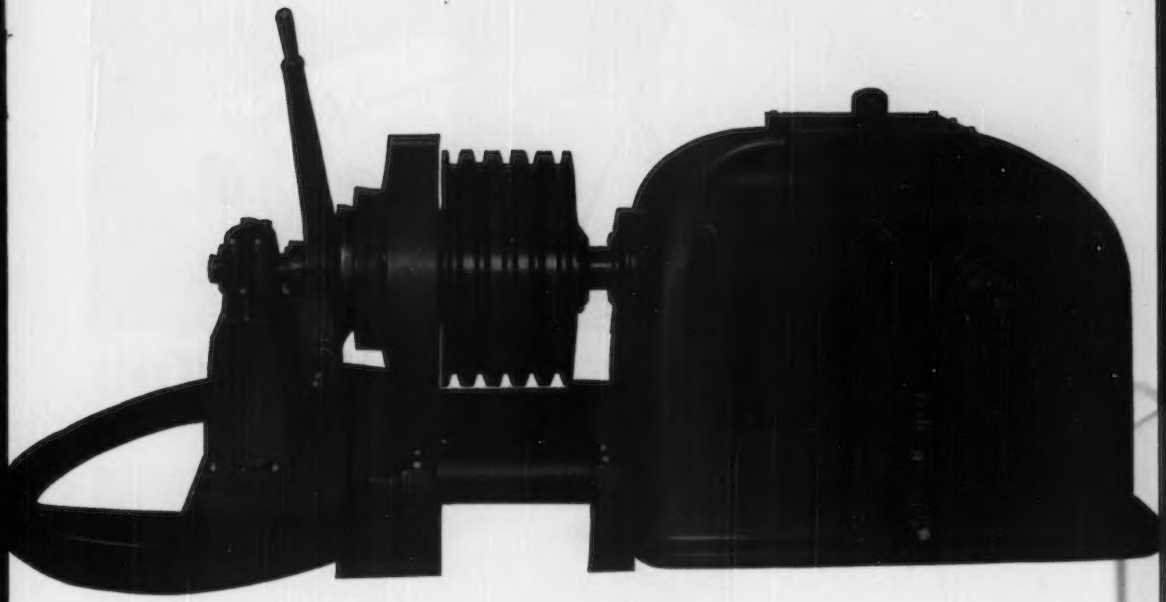
**Bill:** 'Smart Guy' is right.

**SHULER & BENNINGHOFEN, HAMILTON, OHIO**

Miami Woolen Mills

**Hamilton Felts**

Established 1858



# The Simplex Drive

Another new Bagley and Sewall development . . . a streamlined, completely self-contained unit with the base an integral part of the drive. It's compact, sturdy, vibration-free. The base is a rigid, single casting on which the bearings, gears, drive, and clutch are mounted. It requires a minimum of space.

This is a modern drive that will give positive, interlocked power — no jerks or backlash — with a minimum of maintenance.

The speed of the individual units can be varied from 20 to 25% without changing the speed of the prime mover.

This Simplex drive meets a wide range of machine conditions. Power ratings from 30 to 225 h.p. with output shaft speed range of from 40 to 330 r.p.m.

Write us for further information regarding this new Bagley and Sewall ***Simplex*** drive.

## BAGLEY & SEWALL

DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY

WATERTOWN, NEW YORK

*Finland Representative*
Aktiebolaget Ekstroms Maskinaffar
Helsingfors, Finland

New York Office: 500 Fifth Avenue, New York, N. Y.

*Foreign Representative*
Castle and Overton, Inc.
630 Fifth Ave., Rockefeller Center, New York, N. Y.

it's easy to put this tag on

STARCH-CLAY PAPER COATINGS

with... P-364A BECKAMINE!

Here is a resin that will really put the tag of quality on your starch-clay paper coatings! It will increase their water resistance, improve their brightness and give higher wax test results. P-364A can be used with the three starch types most often employed as binders in clay coatings . . . enzyme converted, acid hydrolyzed and chlorinated . . . and may be added to the starch during the cook, at top heat as a chill-back, or to the cooled finish adhesive. This liquid urea-formaldehyde resin is also widely used in the waterproofing of starch adhesives employed in the manufacture of fiber containers. For further details and a working sample, write direct to the Sales Department in Detroit.

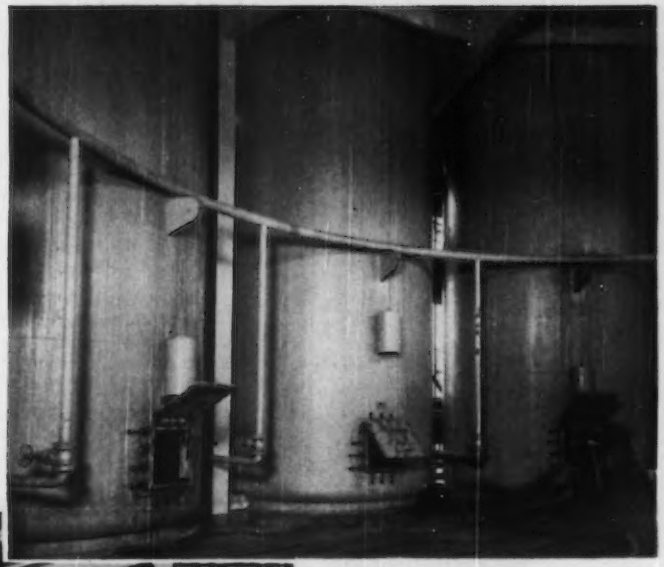
**REICHHOLD CHEMICALS, INC.** RCI

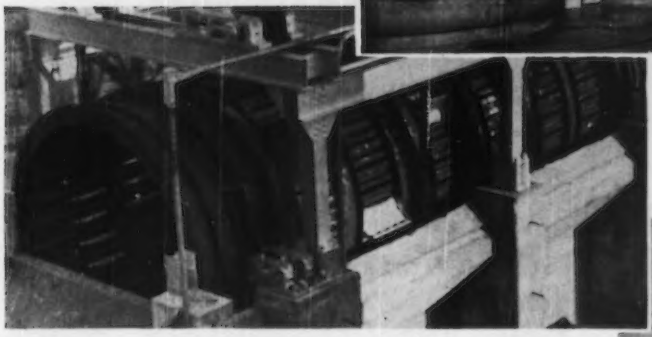
General Offices and Main Plant, Detroit 20, Michigan

Other Plants: Brooklyn, New York • Elizabeth, New Jersey • South San Francisco, California • Tuscaloosa, Alabama • Seattle, Washington • Liverpool, England Paris, France • Sydney, Australia • Sassenheim, Holland • Milan, Italy • Buenos Aires, Argentina • Hamburg, Germany • Toronto, Canada • East London, South Africa

**SYNTHETIC RESINS • CHEMICAL COLORS • PHENOLIC PLASTICS • INDUSTRIAL CHEMICALS**

# *Steel Platework* for the PAPER INDUSTRY

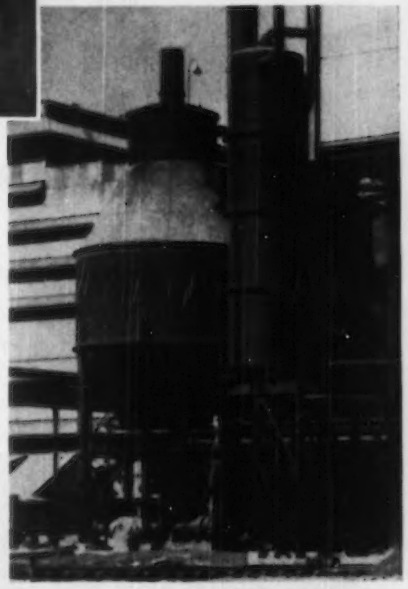




*Above: 14-ft. 6-in. diam. by 33-ft. 4-in. diffusers built for the Container Corp. of America, Fernandina, Florida.*

*At left: barking Drum built for the Fibre Making Processes Inc. for installation at the Chesapeake-Camp Corp. mill, Franklin, Virginia.*

*Below: 26-ft. diam. by 13-ft. elevated blow tank built for the Union Bag and Paper Corporation, Savannah, Georgia.*



Whether you are modernizing existing facilities or building an entirely new plant, CB&I steel plate structures can help you operate more efficiently and profitably. Experience has proved that the *right* kind of process equipment can often place your mill in an advantageous position from the standpoint of steady high production at low cost. Our background of experience in steel plate work assures you that the equipment we build is *right* for the job.

Our facilities for designing, fabricating and erecting steel plate structures are complete. We have equipment for stress-relieving and x-raying digesters and other shop-built structures. We can also furnish tanks with corrosion-resistant linings when mill conditions require it. All our plants are strategically located so that prompt service can be provided. A partial list of equipment we fabricate for pulp and paper mills includes sulphate and sulphite digesters, acid accumulators, diffusers, pulp washing tanks and elevated water tanks.

*Write our nearest office for quotations on storage tanks and steel plate work to meet your requirements.*

## CHICAGO BRIDGE & IRON COMPANY

Atlanta, 3 ..... 2142 Healey Building
Birmingham, 1 ..... 1559 North 50th Street
Boston, 10 ..... 1064-201 Devonshire Street
Chicago, 4 ..... 2130 McCormick Building
Cleveland, 15 ..... 2255 Guildhall Building
Detroit, 26 ..... 1565 Lafayette Building
Houston, 2 ..... 2163 National Standard Building
Havana ..... 402 Abreu Building
Los Angeles 17 ..... 1561 General Petroleum Building
New York 6 ..... 3333-165 Broadway Building
Philadelphia, 3 ..... 1665-1700 Walnut Street Building
Salt Lake City, 4 ..... 567 West 17th South Street
San Francisco, 11 ..... 1277-22 Battery Street Building
Seattle, 1 ..... 1368 Henry Building
Tulsa, 3 ..... 1666 Hount Building

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE

In Canada: HORTON STEEL WORKS, Limited, FORT ERIE, ONT.

# ONLY UNI-PULL GIVES YOU THESE TWO DRIVE LIFE-GUARDS

Here's compact, waterproofed power-transmission with built-in protection for belt and bearings.

It's the new, Uni-Pull drive—the only belt drive that gives you these trouble-reducing features.

**1. UNIFORM PULL ACROSS THE PULLEYS . . . LONGER BELT LIFE**—The waterproofed, flat leather belt is self-protected by the fact that it pulls as a unit. There are no separate tensions which can become uneven and cause excessive wear. There's just *one* belt, *one* pulley grip, *one* even tension across the pulley face.

**2. UNIFORM PULL AROUND THE PULLEYS . . . LONGER BEARING LIFE**—The tension-control motor base automatically keeps the belt at the proper tension despite changes in load. It gives you smooth, even, bearing-saving power over very short centers.

For modern power-transmission in your paper mill, remember the undivided pull of waterproofed leather belting and the Uni-Pull drive.

***American* LEATHER BELTING *Association***

***Headquarters for Authentic Power Transmission Data***

**41 PARK ROW, NEW YORK 7, NEW YORK**

*A — Flat Leather Belt*

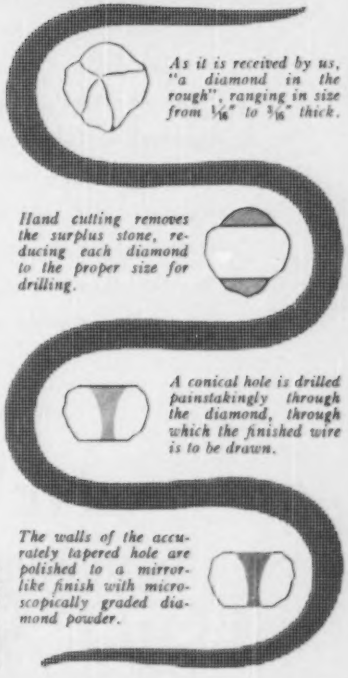
*B — Tension-Controlling Motor Base*

AL-45

# *It takes 60 hours*

## It's a case of *Care, Care, and More Care*

From the sampling of wire from every coil through to the meticulous, speck-less packing of every Lindsay Fourdrinier wire in its box, almost unbelievable care presides over every step in Lindsay manufacture. The tedious making of a Lindsay diamond die is an illustration. Nor is the wire drawing process more precise than the testing that follows—testing for grain size, elongation, tensile strength, yield point and other properties. Ceaseless laboratory control hovers over every phase of the process. The "end objective" is a superior Fourdrinier wire cloth whose quality has progressed steadily ever since Lindsay's origin some 46 years ago.



*As it is received by us, "a diamond in the rough", ranging in size from 1/16" to 5/16" thick.*

*Hand cutting removes the surplus stone, reducing each diamond to the proper size for drilling.*

*A conical hole is drilled painstakingly through the diamond, through which the finished wire is to be drawn.*

*The walls of the accurately tapered hole are polished to a mirror-like finish with microscopically graded diamond powder.*

**THE LINDSAY WIRE WEAVING COMPANY**

14801-14295 ASPINWALL AVENUE
CLEVELAND 10, OHIO

*Lindsay* **WIRES**

FOR PAPER MILLS

# NEWPORT NEWS BUILT DIGESTERS

## Erected in Record Breaking Time

Newport News recently built the five digesters shown above for a large southern mill. Of welded construction they are 39 feet 7 inches in length with a diameter of 12 feet 9 inches. At the conclusion of erection the following letter was received from the mill:

**"May we take this opportunity to advise you that in the erection of these digesters we found that all of the dimensions were adhered to exactly and all of the flanges were perfectly true and level. In fact, we were surprised that you were able to fabricate in such close dimensions, as every digester fit perfectly without any shifting or redrilling.**

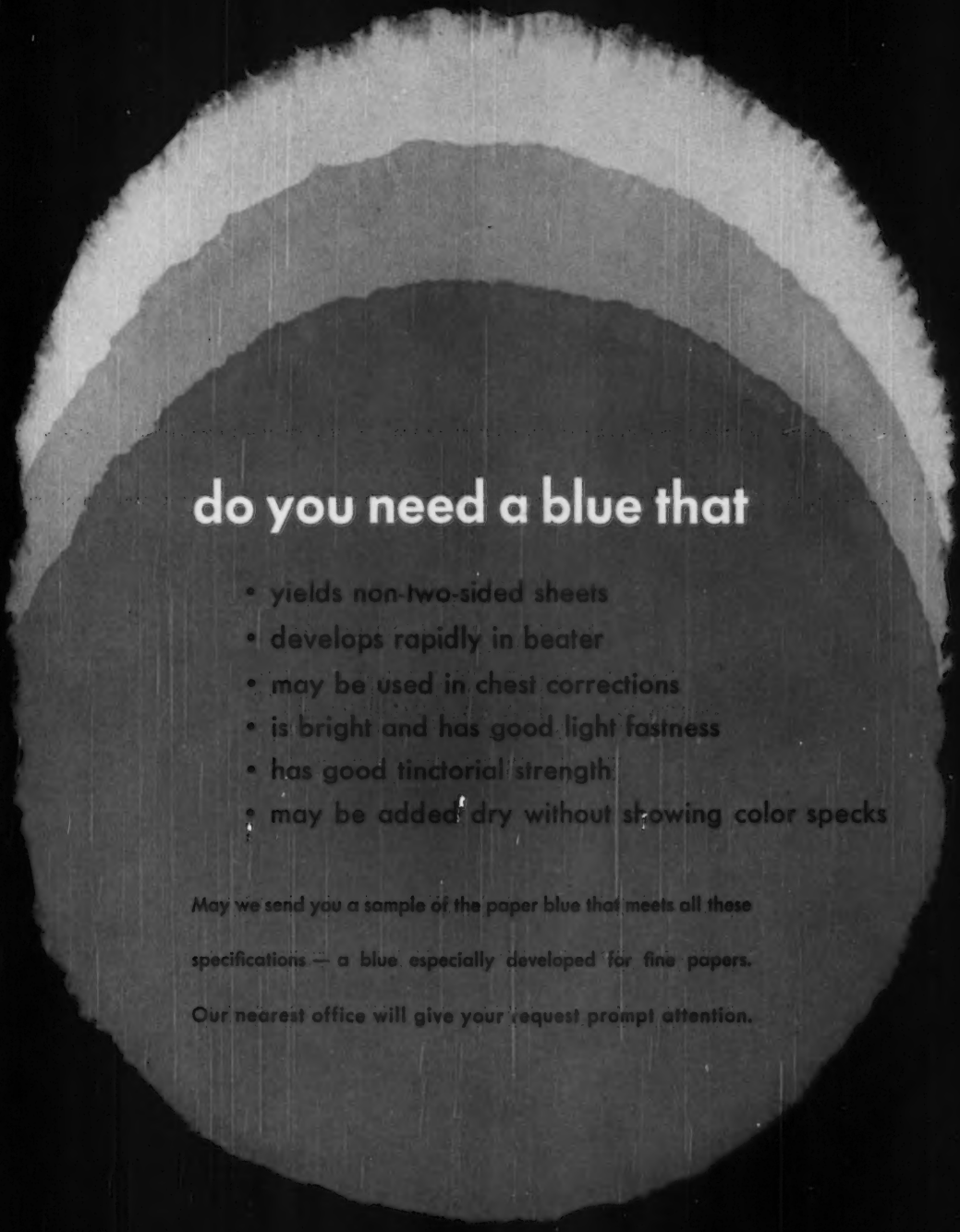
**"We feel that you did a splendid job in the manufacture of these digesters and wish to express our thanks."**

*Write for illustrated booklet, "Facilities and Products."*

# NEWPORT NEWS

## Shipbuilding and Dry Dock Company

NEWPORT NEWS, VIRGINIA



# do you need a blue that

- yields non-two-sided sheets
- develops rapidly in beater
- may be used in chest corrections
- is bright and has good light fastness
- has good tinctorial strength
- may be added dry without showing color specks

May we send you a sample of the paper blue that meets all these specifications — a blue especially developed for fine papers.

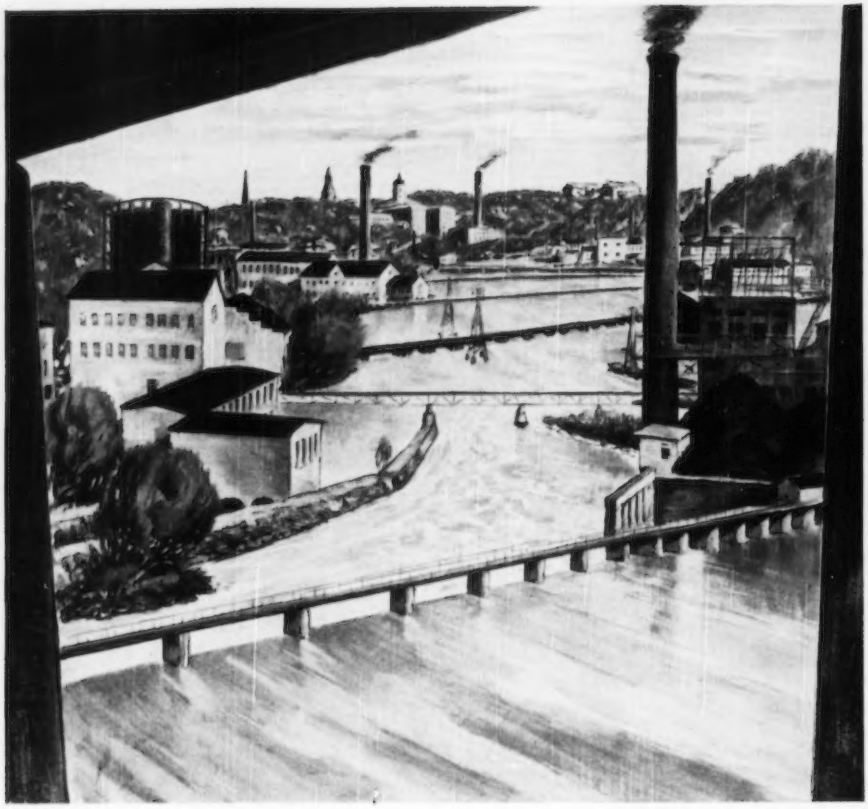
Our nearest office will give your request prompt attention.

**GENERAL DYESTUFF CORPORATION**

435 HUDSON STREET · NEW YORK 14, NEW YORK

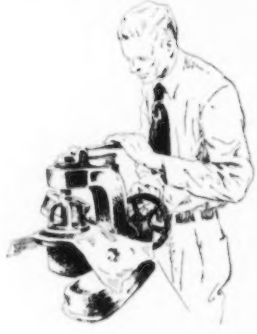
BOSTON · PROVIDENCE · PHILADELPHIA · CHICAGO · CHARLOTTE · SAN FRANCISCO

**APPLETON** - - - - - - - another in a series of scenes . . . areas where Appleton Wires serve the paper industry.



HESITATE here for a moment on Memorial Drive Bridge and glance downstream. This is Appleton, Wisconsin . . . a busy town . . . a beautiful town . . . a pleasant blending of culture and hospitality, higher education, industry, science and agriculture. We are proud of our home town.

Right here at home, in the heart of the Fox River Valley, you'll also find the paper industry. All of these neighborhood mills know, from long experience, that *Appleton Wires are Good Wires!*

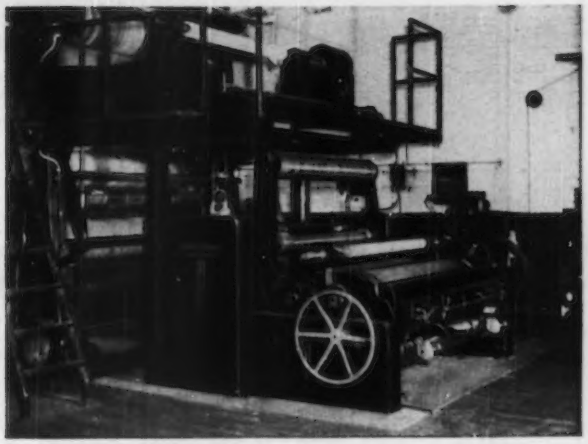


APPLETON WIRE WORKS, INC., APPLETON, WISCONSIN

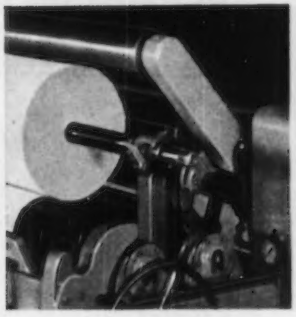
(c) 1953, Appleton Wire Works, Inc.

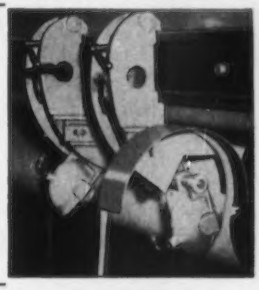
# APPLETON WINDERS & REWINDERS

## Check the New Features of these High-Speed Winders



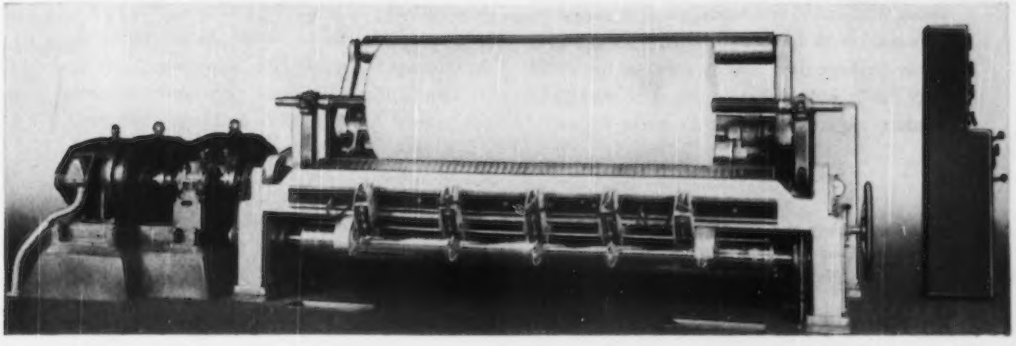
Special features and engineering refinements on Appleton Winders and Rewinders provide the accuracy, control and flexibility that produce uniformly wound rolls at high speeds, clean cut and wrinkle free. The unique automatic swinging-arm riding roll, the pneumatically controlled slitter-knife pressure and release, the hydraulically operated roll ejector and the pneumatic parent roll coupling are representative of the many new features you'll find on these modern high-speed winders and rewinders with slitting attachments. All are described in detail in the Appleton Winder bulletin. Write for your copy today.

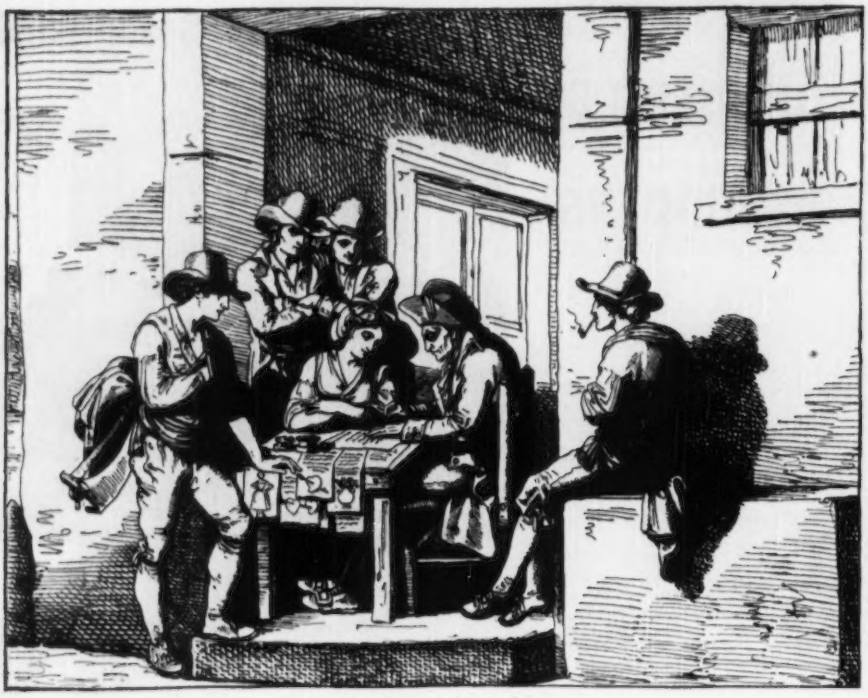




*Eastern U.S.A. and Foreign Representatives*
*CASTLE & OVERTON, INC.*
*630 Fifth Avenue • New York City*

**THE APPLETON MACHINE COMPANY • APPLETON • WISCONSIN**





*Etching, 1805, from the Bettmann Archive*

# "Take a Letter, Please!"

Centuries before the invention of shorthand and the typewriter, the public scribe was a familiar figure in the cities and villages of the Old World. He rendered a useful service, conducting business and family correspondence for those who could not write. Also, he could be counted on to have a few sheets of precious paper. In those days paper was scarce the world over, for it was all handmade. The miracle of modern paper making lay far in the future.

Today, writing and duplicating machines and plentiful paper are the indispensable tools of business—providing the most widely-used and most essential means of communication. And fine papeteries supply the most discriminating demands of social correspondence. Stationery is now a fifty-million-dollar annual business. Production and packaging of writing paper in its various forms constitute an important part of the great American pulp and paper industry.

*The dramatic story of paper is told in the sound-and-color film, "Paper—Pacemaker of Progress," and in a book under the same title. Both are presented by F. C. Huyck & Sons as a tribute to the Paper Industry. The book will be sent free upon request.*

**F. C. HUYCK & SONS · *Kenwood Mills* · RENSSELAER, N. Y.**

KENWOOD WOOL PRODUCTS

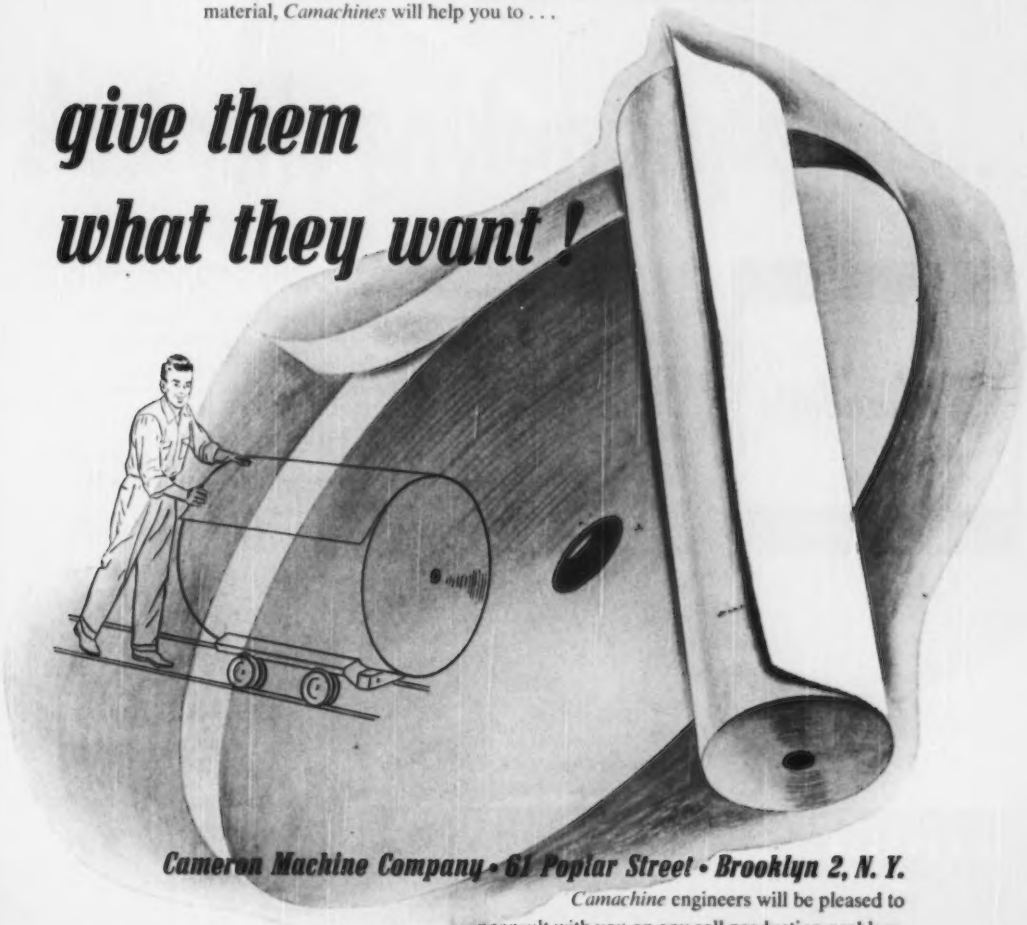
**HUYCK *Felts***

**New Camachines** have the right answer to your roll production problem. Whether it's a two-ton roll of newsprint or a half-ounce roll of plastic tape you give your customers better quality with *Camachine*-made rolls.

*Camachines* are designed and built by specialists in roll production equipment. No matter what material you handle you will be amazed by the performance of the new *Camachines*. Long rolls or thin rolls? Heavy or light? Paper, plastic, rubber or textile? Coated materials, tacky materials or materials of uneven caliper? When it comes to presenting your customers with better rolls of any size, any material, *Camachines* will help you to . . .

*The Camachine Commander*—a fast, heavy-duty slitter-rewinder for plain, waxed, gummed and coated paper or paper board. Speeds up to 2000 fpm. Rewound rolls up to 40" dia. Write for free copy of Bulletin 2000.

# *give them what they want!*



**Cameron Machine Company • 61 Poplar Street • Brooklyn 2, N. Y.**

*Camachine* engineers will be pleased to consult with you on any roll production problem.

# Famous trademarks in paper

More and more leading consumers of coated paper have come to recognize this trademark of Consolidated Water Power and Paper Company as a symbol of *quality* and *economy*.

Consolidated was first to produce an enameled paper simultaneously coated on both sides in a single, high-speed operation. The company's research and experience since that time have resulted in such high-grade enamel papers as Consolidated "Production Gloss" and "Modern Gloss."

# ...and paper making chemicals

For more than half a century, members of the Paper Industry have relied on Wyandotte for "chemicals of quality — in quantity."

By working closely with paper manufacturers, Wyandotte often has been able to anticipate and prepare to meet the industry's changing requirements.

One product of this work is Wyandotte Precipitated Calcium Carbonate *(Purecal-M®)*, a superlative paper-coating pigment that's "tailor-made" for the job.

This highly refined chemical is free from grit and other abrasive materials. It is high in opacity, of desirable particle size, and exceptionally bright. In addition, it has the uniformity so necessary for the extremely high speed of machine coating.

Complete information and technical data on Wyandotte Purecal-M will be furnished at your request.

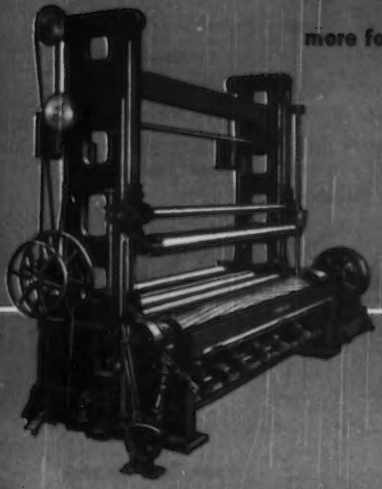
*®Purecal-M is Wyandotte's new trade name for Precipitated Calcium Carbonate.*

**Wyandotte Chemicals Corporation**
Wyandotte, Michigan • Offices in Principal Cities

SODA ASH • CAUSTIC SODA
BICARBONATE OF SODA
CALCIUM CARBONATE • CALCIUM CHLORIDE
CHLORINE • HYDROGEN • DRY ICE
SYNTHETIC DETERGENTS • GLYCOLS
CARBOSE (Sodium CMC) • ETHYLENE DICHLORIDE
PROPYLENE DICHLORIDE
AROMATIC SULFONIC ACID DERIVATIVES
OTHER ORGANIC AND INORGANIC CHEMICALS

# what's a POT?

It's a unit of capacity, half again as large in Switzerland as in Denmark. That's why this Swiss is blowing his Alphorn! Users of Langston Slitters and Roll Winders get so much more for their money, a little toot on our horn seems in order. Samuel M. Langston Company, Camden, New Jersey.



SLITTERS

**Langston**

ROLL WINDERS

Send for this Free Catalog
11-4-PT

# NOW LOOK AT THEM!

Spacer couplings permit removal of the rotor without disturbing piping connections or motor alignment...an external adjustment compensates for impeller wear . . . eductor vanes relieve stuffing box pressure . . . large suction nozzles . . . interchangeability of parts between pumps of different types and sizes.

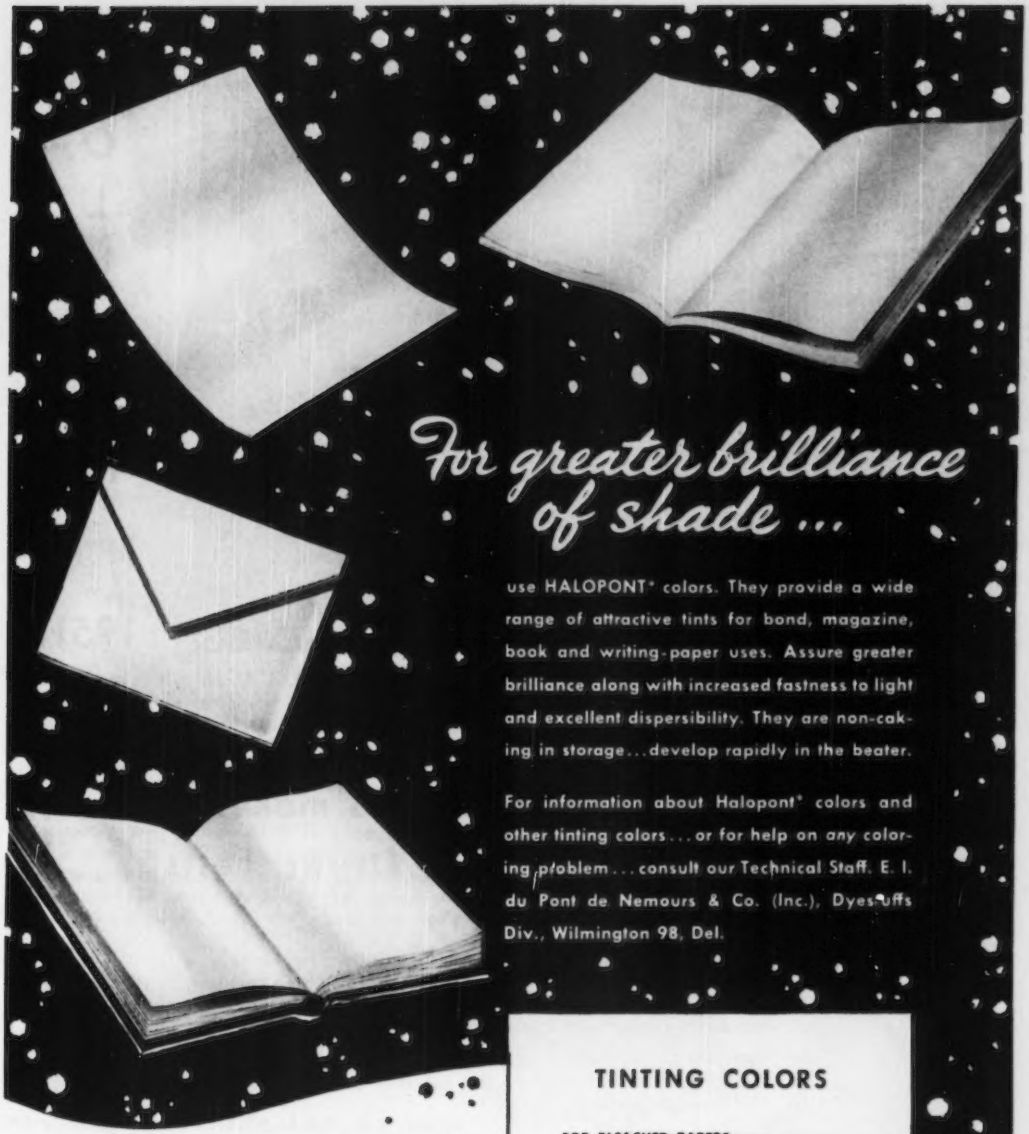
These and other features specified by you are fully described and illustrated in this new catalog. Write for Bulletin 1100.

DE LAVAL

**DE LAVAL STEAM TURBINE COMPANY, TRENTON 2, N. J.**

TURBINES • HELICAL GEARS • CENTRIFUGAL BLOWERS AND COMPRESSORS
CENTRIFUGAL PUMPS • WORM GEAR SPEED REDUCERS • IMO OIL PUMPS

CPP-4



*For greater brilliance of shade ...*

use HALOPONT* colors. They provide a wide range of attractive tints for bond, magazine, book and writing-paper uses. Assure greater brilliance along with increased fastness to light and excellent dispersibility. They are non-caking in storage... develop rapidly in the beater.

For information about Halopont* colors and other tinting colors... or for help on *any* coloring problem... consult our Technical Staff. E. I. du Pont de Nemours & Co. (Inc.), Dyestuffs Div., Wilmington 98, Del.

**TINTING COLORS**

**FOR BLEACHED PAPERS:**

Halopont* Colors
Ponsol* Colors
Monastral* Colors

**For Groundwood Base Papers:**

Du Pont Paper Blue R Conc.
Du Pont Ethyl Violet

*REG. U. S. PAT. OFF.

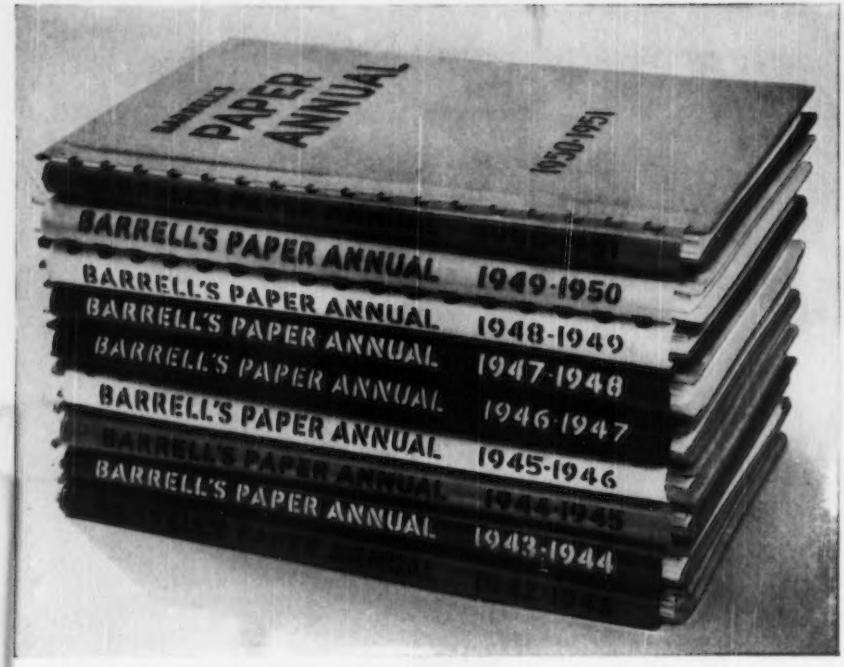
**More color makes more business ... for your customers and you**

*Du Pont Dyestuffs*

DU PONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING... *THROUGH CHEMISTRY*




# VOLUME IX

1950 — 1951

## Presented as a service to members of the Paper Industry by the makers of Siamese & Tour Boss Dryer Felts

**CONTENTS**

Directory of Officials of 34 Paper Associations
Progress in Papermaking
Great American Research Laboratories — No. 3
Paper Engineering at Lowell Textile Institute

**MAIL NOW TO GET FREE COPY VOL. IX**

WILLIAM L. BARRELL COMPANY
52 CHAUNCY ST., BOSTON, MASS.

*Please send free copy* BARRELL'S PAPER ANNUAL Volume IX.

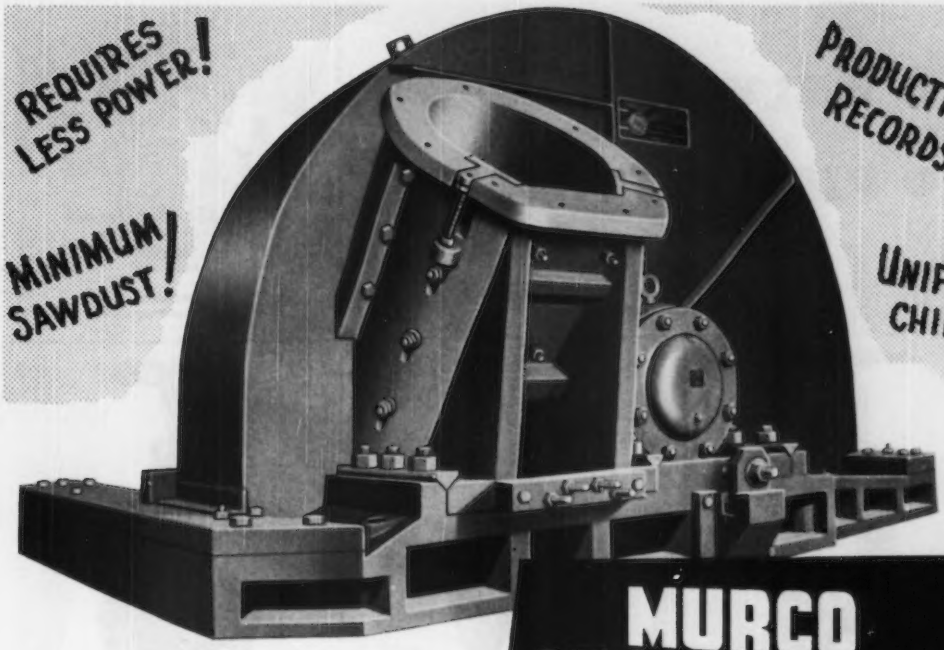
NAME _____
POSITION _____
FIRM _____
STREET _____
CITY OR TOWN _____ STATE _____

REQUIRES LESS POWER!

MINIMUM SAWDUST!

PRODUCTION RECORDS!

UNIFORM CHIPS!

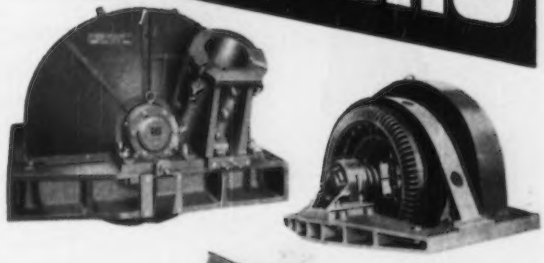


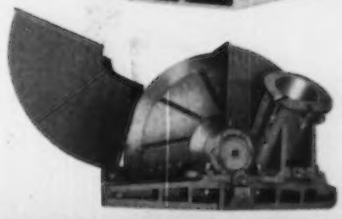
# MURCO MULTIPLE KNIFE CHIPPERS

Designed to fit the job, MURCO Multiple Knife Chippers are the result of long and careful study of the factors that contribute to outstanding performance . . . so that today MURCO Chippers have excellent records of achievement, exceptional endurance, freedom from repairs, while providing better chips with less sawdust, less power and space. MURCO Chippers are real heavy duty machines . . . that places their construction in a preferred class, and although ruggedly built their simplicity of operation makes them desirable for the up to date mill operator.

**CHECK THESE IMPORTANT FEATURES:**

- **Will produce uniform chips.**
- **Minimum sawdust and slivers.**
- **Require less power.**
- **Production records of 100 cords and over per hour.**
- **Vibration reduced to a minimum by heavy design, rigid construction and wide distribution of weight of the heavy mass construction.**





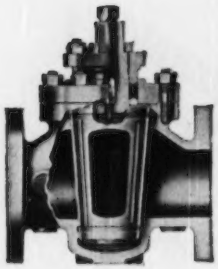
Belted designs, "V" and flat belt. Direct connection to synchronous motor. Direct connected coupled—whatever type is best suited for your installation . . . made in standard sizes 50 to 120 inches (large sizes for special installations).

***Ask for complete details***

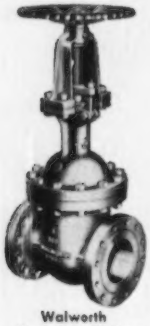
**D. J. MURRAY MANUFACTURING CO.** WAUSAU WISCONSIN

# ● VALVES

# ● PIPE FITTINGS



Walworth
Lubricated Plug Valve



Walworth
Steel Gate Valve

Walworth
Iron Body Gate Valve

Walworth
"500 Brinell" Bronze Globe Valve

Walworth
Iron Body Saddle Gate Valve

Walworth
Cast Steel Flanged Fittings

Walworth manufactures a *complete line* of valves and pipe fittings: all made to the highest standards of quality, both as to dimensional accuracy and metallurgical properties. In design, construction, and performance, Walworth products reflect more than a century of experience in the manufacture of quality valves and fittings.

Your Walworth distributor will give you full information on the *complete line* of Walworth steel, iron, and bronze, and special alloy valves and pipe fittings; also Walworth Lubricated Plug Valves, and Walseal* valves, fittings and flanges. Ask for this information today.

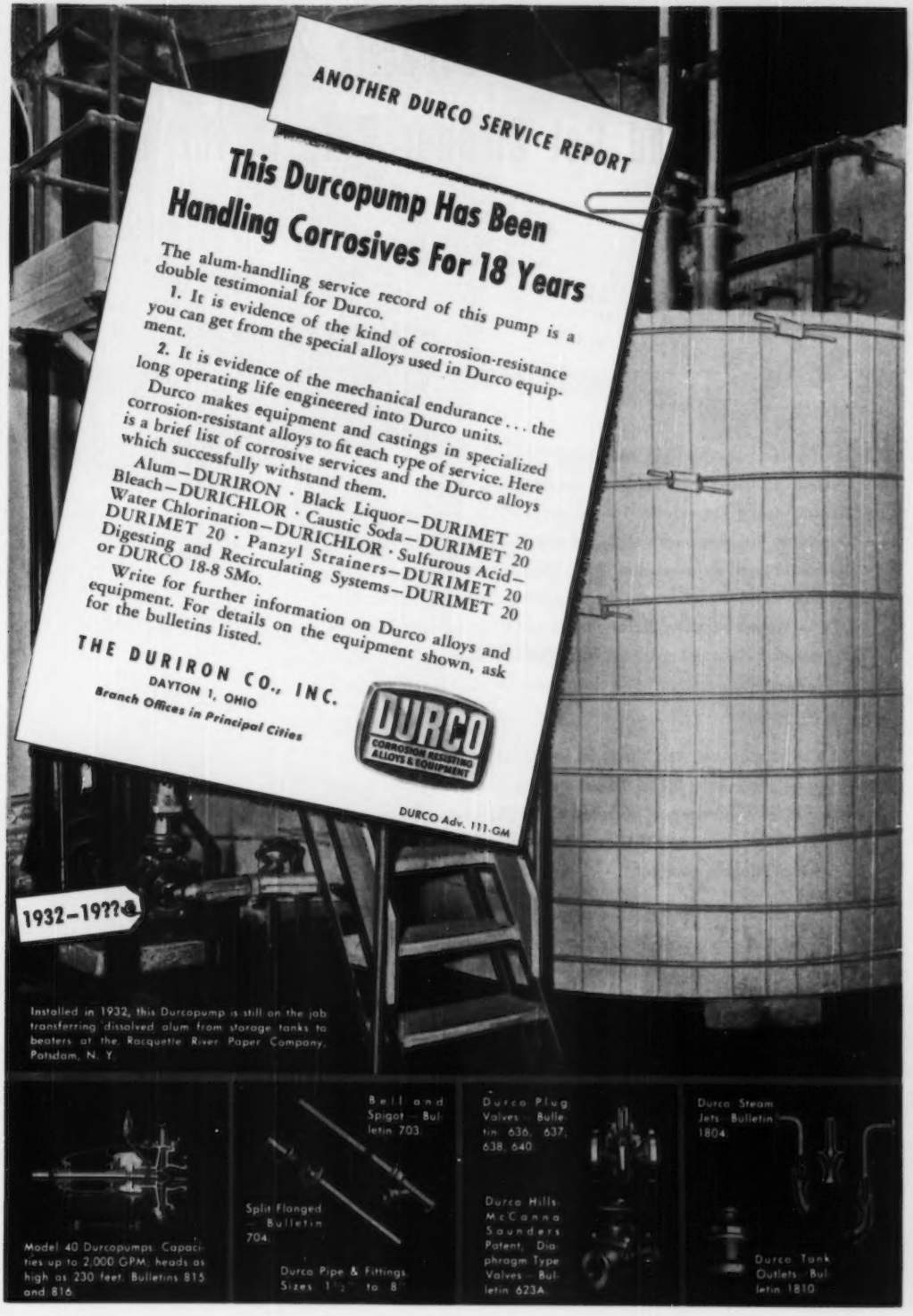
*Patented—Reg. U. S. Pat. Off.

# WALWORTH

## valves and fittings

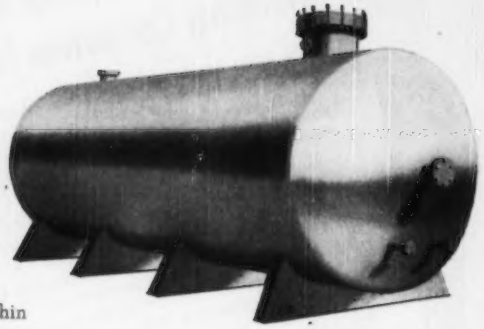
**60 EAST 42nd STREET, NEW YORK 17, N. Y.**

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD


ANOTHER DURCO SERVICE REPORT
This Durcopump Has Been Handling Corrosives For 18 Years
The alum-handling service record of this pump is a double testimonial for Durco.
1. It is evidence of the kind of corrosion-resistance you can get from the special alloys used in Durco equipment.
2. It is evidence of the mechanical endurance . . . the long operating life engineered into Durco units.
Durco makes equipment and castings in specialized corrosion-resistant alloys to fit each type of service. Here is a brief list of corrosive services and the Durco alloys which successfully withstand them.
Alum—DURIRON · Black Liquor—DURIMET 20
Bleach—DURICHLOR · Caustic Soda—DURIMET 20
Water Chlorination—DURICHLOR · Sulfurous Acid—DURIMET 20 · Panzyl Strainers—DURIMET 20
Digesting and Recirculating Systems—DURIMET 20 or DURCO 18-8 SMo.
Write for further information on Durco alloys and equipment. For details on the equipment shown, ask for the bulletins listed.
THE DURIRON CO., INC.
DAYTON 1, OHIO
Branch Offices in Principal Cities
DURCO
CORROSION RESISTING ALLOYS & EQUIPMENT
DURCO Adv. 111-GM
1932–19??
Installed in 1932, this Durcopump is still on the job transferring dissolved alum from storage tanks to beaters at the Racquette River Paper Company, Potsdam, N. Y.
Model 40 Durcopumps. Capacities up to 2,000 GPM, heads as high as 230 feet. Bulletins 815 and 816.
Split Flanged — Bulletin 704.
Bell and Spigot — Bulletin 703.
Durco Pipe & Fittings. Sizes 1½" to 8"
Durco Plug Valves — Bulletin 636, 637, 638, 640
Durco Hills-McCanna Saunders Patent, Diaphragm Type Valves — Bulletin 623A
Durco Steam Jets. Bulletin 1804.
Durco Tank Outlets. Bulletin 1810

ONE OF A SERIES DEMONSTRATING APPLIED LUKENOMICS

# How to Boost Digester Capacity 27% and Get Cleaner Pulp in the Bargain



The Dexter Sulphite Pulp and Paper Company wanted increased production of quality pulp within existing space limitations. To accomplish this, two ceramic-lined pulp digesters were replaced with two modern Mitscherlich, horizontal-type stainless-clad steel digesters of the same outer dimensions as the old ones. The new design, however, provides a 27% increased capacity, faster charge and flush-out and eliminates thermal and chemical spalling. As a result, production is increased, a cleaner pulp produced and down-time for maintenance checks greatly reduced.

Your processes, too, can surely be improved by newly developed, more efficient equipment. Better quality, increased production, economical maintenance, reduced operating costs, longer equipment life are advantages that can't help but produce a more profitable and saleable product.

Behind all such advances is the cooperative ingenuity of engineer, designer, fabricator, materials supplier. This teamwork we call *Lukenomics*. There's a Lukenomics team eager to take on your equipment problems. Tell us about them. Write our Manager of Marketing Service, Lukens Steel Company, 403 Lukens Building, Coatesville, Pa.

*These production-increasing, modern-design digesters were fabricated by Posey Iron Works using low carbon Type 316 Lukens Stainless-Clad Steel.*

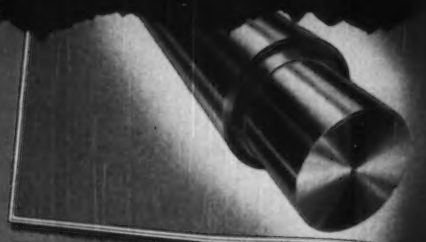
LUKENS

LUKENS STEEL COMPANY

**BETTER PRODUCTS FOR BETTER EQUIPMENT**

SEND FOR THE FULL STORY

*of any of this equipment*

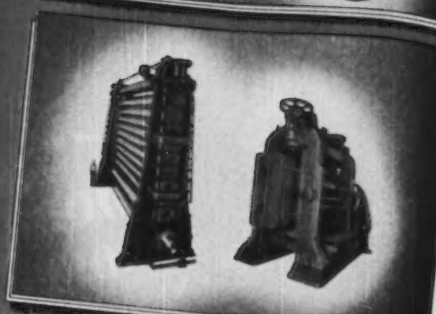


**ROLLS**

Farrel rolls are made in the world's largest specialty roll shop devoted to the production of rolls *to meet your needs exactly*. Behind their exceptional quality lies almost a century of roll-making experience, plus the development of highly specialized facilities and exacting methods of quality control.

Made of various metals and metal alloys to best suit different paper mill requirements, Farrel rolls can be furnished in sizes from 5" to 72" in diameter and up to 312" face length.

**Send for Bulletin 116**



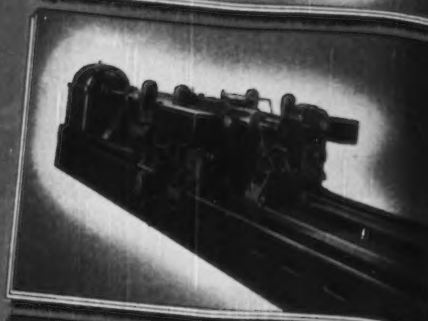
**CALENDERS**

Farrel paper-machine calenders can be made with rolls in any face length up to 312".

Housings are box section type, possessing great stiffness and rigidity. Roll journals are mounted in either sleeve-type or antifriction bearings. For raising the rolls, calenders are equipped with electric, hydraulic or ratchet lift, all operated from the floor.

Board calenders are also available in a wide range of sizes, designed to suit your requirements.

**Send for Bulletin 117**



**ROLL GRINDERS**

Farrel two-wheel, swing rest roll grinders, designed especially for grinding the long rolls used in the paper industry, are capable of producing unusual accuracy and smooth finish. The exclusive swing-rest principle, with the use of two grinding wheels, reduces to a minimum the minor inaccuracies imparted to the roll when grinding with any fixed-rest machine.

The patented crowning device produces exactly the crown desired without manipulation on the part of the operator. New wheelhead design permits changing wheels without disturbing spindles or bearings.

Available in two sizes for roll diameters up to 32" and 42", any length required.

**Send for Bulletin 118**

**ROLL CALIPERS**

Farrel roll calipers provide the quickest method of checking accuracy of roll diameter and crown, either when the roll is in or out of the grinder. They will detect variations in roll diameters down to .0001". Readings can be taken at any point along the face of the roll, and at any number of points. Rolls can be checked in a fraction of the time required to test them with a micrometer or steel tape, and with far greater accuracy.

Available in five sizes for rolls from 4" to 50" in diameter.

**Send for Bulletin 112**

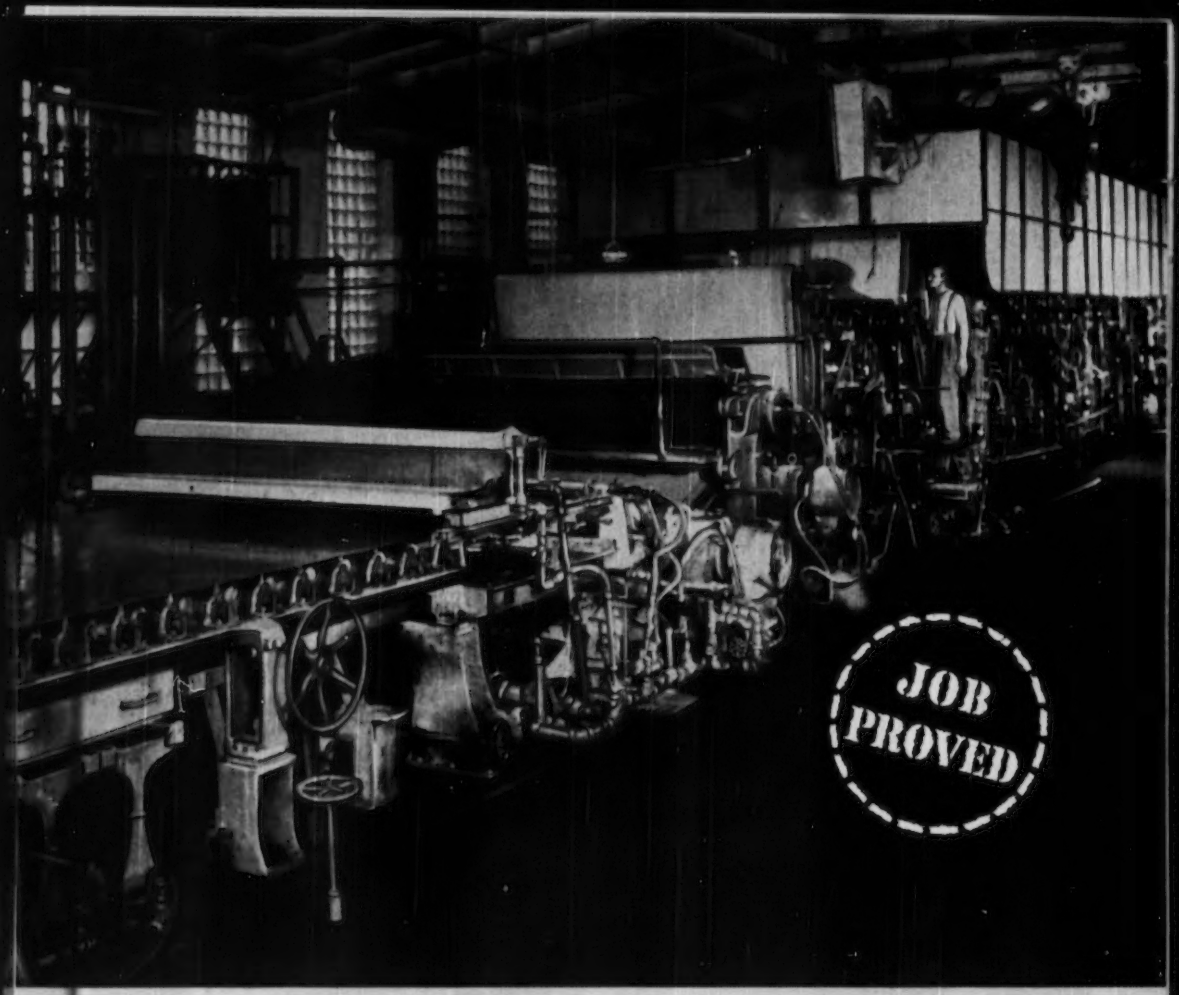
PB-606

**FARREL-BIRMINGHAM COMPANY, INC.**

ANSONIA, CONNECTICUT

*Plants:* Ansonia and Derby, Conn., Buffalo, N. Y.
*Sales Offices:* Ansonia, Buffalo, New York, Akron, Chicago, Los Angeles, Houston

*Farrel-Birmingham*




# 10 YEARS WITHOUT A BEARING FAILURE

## Circo XX Heavy Gives Paper Maker Maximum Protection Against Production Delays

The Fourdrinier shown above is one of six which turn out 180,000 feet of fine offset and specialty paper every hour. In order to achieve this output, the machines are kept in constant operation. To make absolutely certain that nothing slows production down, the company takes every possible precaution against bearing failure.

The drier roll bearings on all six Fourdriniers have been lubricated by "Job Proved" Circo XX Heavy Oil for the past ten years. In this length of time there has never been a bearing failure because of inadequate lubrication. Because of the low carbon residue of Circo XX Heavy, bearings are cleaned only when the machines are torn down for routine inspection.

This is one case history among many which show the advantages of using Sun "Job Proved" Products. To help you solve your production problems, Sun Oil Company offers you a wide selection of "Job Proved" petroleum products, plus the experience of Sun representatives. Their know-how and detailed product information are yours for the asking. Just call or write your nearest Sun Office.

**SUN OIL COMPANY** · *Philadelphia 3, Pa.*
*In Canada:* Sun Oil Company, Ltd.
Toronto and Montreal

**SUN PETROLEUM PRODUCTS**
"JOB PROVED" IN EVERY INDUSTRY

SUNOCO®

Paper TRADE JOURNAL

# TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, June 14, 1950

### Pulp Prices Get Gentle Lift

Though only a few of the "lead" prices had been announced at press time, it appeared that third-quarter pulp prices are getting a gentle lift. The average is $7/$10 a ton. (For details, see *Prices* page.)

*Unbleached Kraft.*—Correcting last week's report that one Canadian grade of unbleached kraft will remain at $82.50, the price of $85 which became effective June 1 is unchanged.

To those who would see in current business trends another boom, it is worthy of note that in these price changes there is no likeness to those of the postwar boom. The market is serious and responsible for the most part, though optimistic about the balance of this year. American producers are alert to the delicate profit position of their non-integrated customers, also hesitant about disturbing the price equilibrium of the paper market which ultimately assures the industry's future. And, to judge from Swedish reports, there is little desire in Scandinavia to "upset the applecart" either for U. S. paper mills or for their own future market. Says the columnist in *Svensk Pappersmassetidning:*

"The pulp and paper markets in the U. S. are still very firm. As is well known, efforts are made there to keep prices fairly steady, and the quotations for domestic pulp have varied but little in the last six months. Some minor increases in respect of soda pulp and bleached kraft have been effected lately, however, but a general rise in respect of domestic pulp is hardly expected now. The pulp imported from Europe is well on a level with the domestic pulp, but the prices obtained by the Scandinavian mills in other markets are of course higher than can be obtained for shipments to America. In view of the great demand from European and overseas markets other than North America, the producers are faced by the problem of how to distribute their sales and shipments. There is probably a general wish in Swedish cellulose circles to try to retain, now and in the future, the American market to approximately the same extent as last year, and to support their old customers in this important market. From a general Swedish point of view, it also is of importance to maintain our exports to America with a view to earning dollars. Even though the profits on cellulose shipments to the U.S.A. are thus not as great as might be desired considering production costs and the profits obtainable elsewhere, the Swedish mills will hardly demand correspondingly higher prices in the present situation. It therefore seems likely that in their agreements with their American customers for shipments in the third quarter, most of the Swedish sellers will, on the whole, stick to the current quotations for domestic and Canadian pulp, though perhaps on the higher side; possibly with some minor upward adjustments on the prices of the second quarter; unbleached kraft pulp in particular, of course, badly needs a rise."

**PAPERBOARD PRODUCTION, BY TYPE, APRIL, 1950**

(Tons of 2000 lbs.)

| | April 1950 | March 1950 | April 1949 |
|---|---|---|---|
| Paperboard, total | 836,914 | 889,781 | 683,181 |
| Liners | 278,960 | 289,060 | 219,037 |
| Corrugating material | 127,786 | 126,635 | 98,885 |
| Container chip and filler board | 22,928 | 24,141 | 23,451 |
| Folding boxboard (for use in folding box plants only) | 181,138 | 201,941 | 163,675 |
| Set-up boxboard (for use in set-up box plants only) | 51,745 | 57,807 | 46,359 |
| Cardboard | 6,579 | 6,923 | 6,101 |
| All other paperboard | 167,778 | 183,274 | 125,673 |

Source: Bureau of the Census.

**Paperboard Production (Tons)***

| | June 3 1950 | May 27 1950 | June 4 1949 |
|---|---|---|---|
| Production | 193,563 | 209,350 | 137,521 |
| New Orders | 254,251 | 187,300 | 183,749 |
| Unfilled Orders | 395,483 | 333,486 | 283,585 |

Source: NPA.

### Breakdown of Paperboard Gains

The much-tooted gains in paperboard production are misleading without a study of the breakdown. It cannot be over-emphasized that heaviest gains are coming from the liners and corrugating materials needed for packing durables, also for sizeable Government orders. The seasonal sag in folding and set-up boxes already has been reported, though frozen food packages soar. Census figures for April are submitted.

### Marked Strength in Waste Papers

With mill shutdowns but 15 days away, heavy trading in waste paper continues contraseasonally. The market is strong and active. Dealers look for only a mild letup in buying.

Hard white cuttings are in heightened demand as a result of the strike at the Weyerhaeuser mills. Manila tab cards and cup cuttings also are wanted items. Old corrugated and mixed papers are in short supply and active demand. Price advances on both items probably will stimulate collections: old corrugated was advanced $3; No. 1 mixed, $2; No. 1 news continues in oversupply.

Consumption of all grades for April stood at 601,161 tons, compared with 650,007 tons in March, 1950, 572,188 tons in February, and 589,046 in January. Inventories show a slight gain.

### Materials

*Blanc Fixe.*—Price rise of $5 per ton due July 1 on dry by-product, $2 on pulp materials.

*Casein.*—Gains in domestic production taken up by steady absorption. prices irregular at 21/24c. Argentine supply reported as ample at 20¼/21c. European offerings reported at: French, 19¼/20c; Dutch, 21c; German, 20c; Danish, 21½/22c.

*Rosin.*—Demand improves, also tone of market. Prices now but a few cents above loan figures. Foreign and domestic business better, and a steady pickup looks likely.

*Starches: Potato.*—Prices unchanged. Production ended and, in view of continuing heavy demand, there is likely to be a small carry-over. Market strong.

*Corn.*—Demand good. Price firm and guaranteed against further rise to June 15.

*Tapioca.*—Prices have declined but trading is not heavy. Volume tonnage expected later in summer.

*Titanium Dioxide.*—Demand heavy, supplies tight.

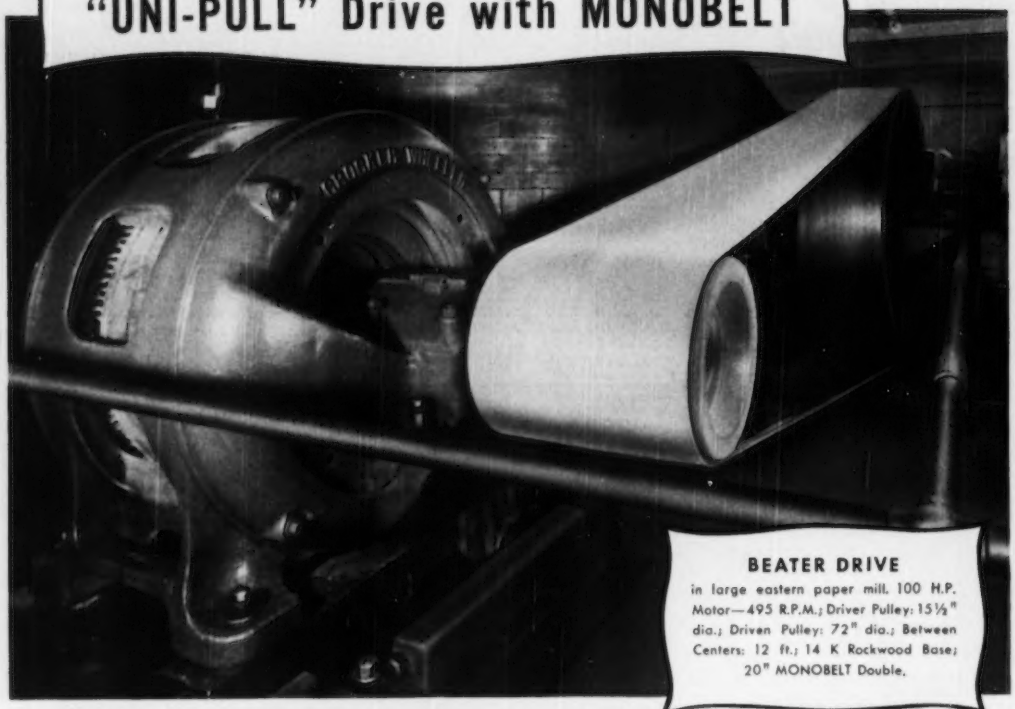
**WOODPULP: U. S. PRODUCTION CONSUMPTION, INVENTORIES, APRIL, 1950**

(Tons of 2,000 pounds)

| Grade | U.S. Production Tons | % of Base | Consumption in paper & board manuf. | End of Month Inventories: At pulp mills, for later sale | At paper & bd. mills April | At paper & bd. mills March |
|---|---|---|---|---|---|---|
| Total | 1,160,818 | 89.3 | | 36,047 | 400,107 | 426,517 |
| Sulfite, Total | 232,183 | 87.0 | 270,011 | 27,424 | 211,285 | 222,445 |
| Blchd. Total | 172,536 | | 168,997 | | 88,569 | 95,179 |
| Dissolving | 37,828 | | 2,386 | | 10,616 | 11,114 |
| Softwood | 125,425 | | 156,157 | | 74,579 | 80,882 |
| Hardwood | 9,283 | | 10,454 | | 3,374 | 3,183 |
| Unbichd. | 59,647 | | 101,014 | | 122,716 | 127,266 |
| Sulfate Total | 584,002 | 96.6 | 662,264 | 1,721 | 134,656 | 146,205 |
| Bichd. | 114,308 | | 149,028 | | 62,649 | 68,182 |
| Semi-bichd. | 25,671 | | 28,880 | | 5,549 | 5,048 |
| Unbichd. | 444,023 | | 484,356 | | 65,858 | 72,975 |
| Soda | 46,079 | 95.3 | 46,971 | 340 | 12,757 | 12,764 |
| Groundwood | 174,732 | 79.6 | 194,713 | 591 | 36,139 | 38,943 |
| All others | 123,822 | 76.2 | 124,950 | 5,971 | n.a. | n.a. |

Based on Bureau of Census figures. n.a.—not available.

# "UNI-PULL" Drive with MONOBELT



**BEATER DRIVE**
in large eastern paper mill. 100 H.P. Motor—495 R.P.M.; Driver Pulley: 15½" dia.; Driven Pulley: 72" dia.; Between Centers: 12 ft.; 14 K Rockwood Base; 20" MONOBELT Double.

## for Efficient Power Transmission . . . Long Life . . . Freedom From Trouble in MODERN *Paper Mill Drives*

"UNI-PULL" . . . the modern drive combining flat leather MONOBELT with a tension-controlling motor base . . . provides uniform pull *around* the pulleys and *across* the pulleys. It prevents excessive wear on bearings and assures the most efficient transmission of power by automatically maintaining a uniform tension even when changes in load occur. MONOBELT . . . the *patented*, water-proofed leather belt . . . insures maximum performance of the "UNI-PULL" drive. It retains its high frictional qualities throughout its entire life and absorbs shock loads and overloads. MONOBELT is tough, durable, has high horse-power capacity and will out-perform and out-wear ordinary belting. "UNI-PULL" drives with MONOBELT pull as a unit, eliminating the separate, uneven tensions of multiple-belt drives. All of these factors add up to more efficient transmission of power . . . longer life . . . and freedom from trouble in paper mill drives. It will pay you to investigate "UNI-PULL" with MONOBELT on your present drives as well as new installations. Ask your local distributor for the facts . . . or write directly to us.

**Facts about MONOBELT**

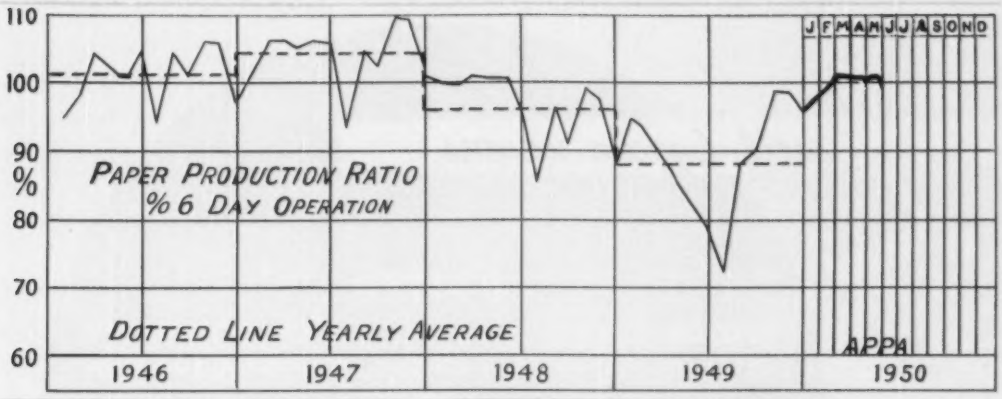
- Made from center portions of the finest hides
- First quality vegetable tanned leather
- Curried under exclusive ALEXANDER process which intensifies natural frictional qualities, increases tensile strength and eliminates abnormal stretch.

## ALEXANDER BROTHERS

**406 North 3rd St., Philadelphia 23, Pa.**

***Branches in Chicago • Charlotte • New York • Distributors in all principal cities***

## Weekly Brief of Important Figures




| Source | Production | WEEK ENDING June 3, '50 | May 6, '50 | June 4, '49 |
|---|---|---|---|---|
| APPA | Paper Production percent 6-day Capacity | 98.5 | 102.8 | 78.6 |
| | Unbl. Kraft Paper Production percent | 95.8 | 103.9 | 63.7 |
| NPA | Paperboard Operating Ratio percent inch hours | 83.0 | 92.0 | 65.0 |
| | | **Apr. 1950** | **Mar. 1950‡** | **Apr. 1949** |
| APPA | Paper Production* (Except Newsprint and Building Papers) ..... Tons | 774,000 | 837,187 | 664,594 |
| | New Orders ..... Tons | 779,500 | 854,627 | 634,122 |
| | Unfilled Orders ..... Tons | 543,100 | 532,750 | 347,140 |
| | Shipments ..... Tons | 768,000 | 840,905 | 664,179 |
| | | **May 1950‡** | **April 1950** | **May 1949** |
| NPA | Paperboard Production ..... Tons | 1,031,369 | 851,000 | 692,300 |
| | New Orders ..... Tons | 1,091,175 | 843,000 | 686,700 |
| | Unfilled Orders ..... Tons | 395,483 | 350,000 | 238,700 |
| | **Our Customers Activities Index[1]** | **Latest Mo.°** | **Previous Mo.°** | **Year Ago°** |
| FRS | Manufactures Total Index | 191 | 189 | 190 |
| | Durable Mfg. Index | 211 | 204 | 221 |
| | Nondurable Mfg. Index | 175 | 176 | 164 |
| | Chemical Products Index | 250 | 250 | 248 |
| | Mfg. Food Products Index | 148 | 145 | 145 |
| | Printing and Publishing Index | 169 | 167 | 156 |
| ODC | Magazine Advg.-Printer's Ink Index | 328 | 330 | 350 |
| | Retail Sales Combined Adjusted Index | 303.8 | 306.1 | 302.0 |
| | Drug Index | 220.2 | 220.7 | 225.2 |
| | General Merchandise Group Index | 291.3 | 297.0 | 289.9 |
| | Grocery and Combination Index | 377.3 | 368.3 | 367.1 |
| | **Prices Index** | | | |
| BLS | Consumers Price Index[1] | 167.0 | 166.5 | 169.5 |
| | Wholesale all Commodities[2] | 152.6 | 152.7 | 158.4 |
| | Wholesale Foods[2] | 155.5 | 156.7 | 162.9 |
| | Commodities other than Farm Products and Foods[2] | 146.0 | 145.9 | 150.7 |
| | Wholesale Pulp and Paper[2] | 155.5 | 155.6 | 167.2 |
| | Purchasing Power of Dollar, Consumers Prices[1] | 59.9 | 60.1 | 59.0 |
| | **General Activity Index** | | | |
| FRS | Mfg. Production-Worker Payroll | 330.1 | 329.2 | 332.8 |
| | Unemployment Compensation Initial Claims (M) | 1,294 | 1,240 | 1,458 |
| | Miscellaneous Carloadings–Thousands of Cars | 1,688 | 1,297 | 1,743 |
| | Electric Output (Million KW hr.) | 31,864 | 28,789 | 29,514 |
| PTJ | Average 32 P & P Common Stocks as of June 6 | $34.16 | $33.64 | $23.16 |
| | Average Indicated Dividends Common Stocks as of June 6 | $ 2.32 | $ 2.29 | $ 2.14 |

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
* For details see APPA Monthly Statistical Summary—April 1950 Estimated Figures
° Latest Month Available on Request
‡ For Five Weeks

*well-known names*

**UNITED**
**ENGINEERING AND FOUNDRY COMPANY**
DESIGNERS AND MAKERS OF ROLLS AND ROLLING MILL EQUIPMENT

**LOBDELL COMPANY**
DESIGNERS AND MAKERS OF PAPER MILL MACHINERY
AND NAZEL FORGING HAMMERS

*Unite to produce even better equipment*

Affiliation of the Lobdell Company with the United Engineering and Foundry Company brings increased metallurgical and greatly enlarged roll casting facilities to one of the oldest manufacturers of paper mill machinery. No roll is too large; no problem too difficult. Write us about your needs.

**LOBDELL UNITED COMPANY**
A SUBSIDIARY OF UNITED ENGINEERING AND FOUNDRY COMPANY
1836 WILMINGTON 99, DELAWARE 1950

# News of the Week

## Weston Succeeds Craigie As Secretary-Treasurer of Superintendents Assn.

George W. Craigie, secretary-treasurer of the American Pulp and Paper Mill Superintendents Assn., Inc., on June 7, 1950, at a board of directors meeting of the association, submitted his resignation from that post, effective August 31, 1950. This meeting was held at the Edgewater Beach hotel, Chicago, Ill., the day previous to the opening of the 31st annual convention of the association there.

Mr. Craigie came with the association on March 15, 1936, in the capacity of field secretary. His first official act of note was in staging the Toronto (Ont.) convention in 1938. At that time, he maintained his office at Cumberland Mills, Maine.

Upon the retirement of Robert L. Eminger as secretary-treasurer of the association in 1944, Mr. Craigie succeeded him in office and the headquarter's office location was changed from Miamisburg, Ohio, to New York City, where it has since remained.

During the period with which Mr. Craigie has been connected with the association, the association has witnessed a remarkable growth both in membership and in prestige.

Following Mr. Craigie's resignation, Harry E. Weston, who has been serving the association as associate secretary-treasurer since February, 1948, with office in Chicago, was elected to succeed him. Also, it was decided at the same meeting to move the headquarters office from New York to Chicago on September 1, 1950.

Mr. Weston became a member of the association in 1924. He has been connected with the industry since his student days in high school. He is well known throughout the industry, having traveled widely and having been an extensive contributor to its literature for many years.

### Barton Named Trustee

Ray L. Barton, superintendent of the Michigan Paper Co. of Plainwell, has been elected a trustee of the American Pulp and Paper Mill Superintendents Assn., Inc., to fulfill the unexpired term of the late Killey E. Terry.

HARRY E. WESTON

### New Members Of Board

Two new members were elected to the board of directors of the American Pulp & Paper Mill Superintendents Assn., Inc. They are, Raymond F. Bennett, Ecusta Paper Corp., and Oscar Stamets, formerly of Regal Paper Corp.

### Orr Felt Host to Superintendents

DAYTON, Ohio — As has been customary during the past several years, the members and affiliates of the Miami Valley and Michigan Divisions of the Superintendents Assn. held their spring meeting as guests of The Orr Felt & Blanket Co. of Piqua, Ohio, on May 26. A number of the visitors toured the plant. Interest of the men centered in a golf tournament during the afternoon, while the women played cards at Hotel Favorite.

Both men and women enjoyed a cocktail hour on the Orr premises during the early evening, after which the members of the fair sex were conveyed to the Piqua Country Club for dinner. The men were served their dinner in the Orr cafeteria.

The stag dinner was followed by a business session at which the chairman of the Miami Valley Division, Kon Matchuck, presided. Incidentally, he is superintendent of The Maxwell Paper Co., Franklin, Ohio. He first presented the prizes won in the golf match. Then he introduced Prof. Harold Brooks, of the Middletown (Ohio) High School, who spoke on "The Sears Roebuck Catalog — Its Place in American Life." Prof. Brooks handled his subject in an informative and amusing manner. One of the interesting subjects he covered was a comparison of prices during the past with those of today.

Among the guests were two visitors from abroad: Hans Heller of Wersenstian Paper Co., Germany, and Francois Paturle, of Ansentat Paper Co., France.

In addition to Chairman Matchuck, the officers of the Miami Division of The American Pulp & Paper Mill Superintendents Association, Inc., are: first vice-chairman, John Burdshall, The Crystal Tissue Co., Middletown, Ohio; second vice-chairman, E. Brindley, The Chaney Pulp Mill, Franklin, Ohio; and secretary-treasurer, Charles Moore, The Maxwell Paper Co., Franklin, Ohio.

### Buckman Wins Mando Fellowship

MINNEAPOLIS, Minn. — Robert E. Buckman, a recent graduate of the University of Minnesota School of Forestry, has been awarded the Minnesota & Ontario Paper Co. graduate research fellowship in forestry for 1950-51, Dr. Frank Kaufert, director of the school, has announced.

Established in 1946, the Mando fellowship provides for studies concentrated on forestry problems meriting special attention. This year's fellowship, said Kaufert, will be primarily utilized to determine the extent of reproduction on recently cut over state and private lands. The work will be carried on under the direction of Professor Arthur E. Schneider of the school.

The results of this study will be made available to the public, said Dr. Kaufert, and should be helpful to foresters, public owners of forest lands, and private owners in determining desirable cutting practices.

# 31st Annual Convention—American Pulp & Paper Mill Superintendents Assn.

## Edgewater Beach Hotel, Chicago, Ill., June 7-10, 1950

The 31st Annual Convention of the Superintendent's Assn. began unofficially with registration for the plant visits at 9:30 A.M. on Wednesday, June 7. Convention registration began at 11:00 A.M.

Immediately after lunch there was golf at Nordic Hills Country Club. Other groups visited the plants of W. F. Hall Printing Co.; I. S. Berlin Press; Newman-Rudolph Lithographing Co.; and Sinclair & Valentine Co.

**ALLAN HYER**
Affiliates Chairman

### Affiliates' Dinner

The formal annual meeting started with a bang at the Affiliates' Dinner. Mr. Frank W. Lovejoy of Socony-Vacuum Oil Co., an Affiliate, highlighted the dinner in his talk on "Merchandising." He very pointedly stressed, get out from behind the mahogany and find out what the man in the street wants. He can make or break you; you have to merchandise your product, the free enterprise system, your country, or you lose all. *"It's later than you think."*

The Affiliate officers for the coming year are:

Allan Hyer, Chairman, Bagley & Sewall Co.; W. K. Metcalfe, First Vice-Chairman, J. O. Ross Engineering Corp.; Walter Morehouse, Second Vice-Chairman Nopco Chemical Co.; A. M. Cooper, Westinghouse Electric Corp.; C. D. DeMers, Taylor Instruments Co.; R. T. Kidde, Hills-McCanna Co.; J. H. Loomis, American Cyanamid Co.; Howard Roderick, Wyandotte Chemicals Corp.; L. M. Woodside, Albany Felt Co.; F. A. Soderberg, Ex-Officio, General Dyestuff Corp.; H. E. Weston, Secretary-Treasurer, The American Pulp and Paper Mill Superintendents Assn., Inc.

**CHARLES E. ACKLEY**
President

Secretary Weston reported twenty-five new Affiliates:

Albany Felt Co., Albany 1, N. Y.; Louis Allis Co., 427 Stewart St., Milwaukee, Wis.; American Brass Co., Waterbury, Conn.; American Hoist & Derrick Co., 63 S. Robert St., St. Paul, Minn.; Buffalo Pumps, Inc., Buffalo, N. Y.; Chicago Bridge & Iron Co., 332 S. Michigan Ave., Chicago 4, Ill.; Ciba Co., Inc., 627 Greenwich St., New York 14, N. Y.; Continental Foundry & Machine Co., East Chicago, Ind.; Draper Brothers Co., Canton, Mass.; Frank W. Egan & Co., 108 Hamilton St., Bound Brook, N. J.; ESSO Standard Oil Co., 15 W. 51st St., New York 19, N. Y.; Felker Brothers Mfg. Co., Marshfield, Wis.; The H. M. Harper Co., Morton Grove, Ill.; Hart & Harrington, Inc., 925 W. Weed St., Chicago 22, Ill.; Heresite & Chemical Co., Manitowoc, Wis.; Huss Lumber Co., 2301 N. Racine Ave., Chicago 14, Ill.; F. C. Huyck & Sons, Albany 1, N. Y.; Manchester Machine Co., Middletown, Ohio; H. & T. McCluskey & Sons, Inc., 527 Grand Ave., New Haven 11, Conn.; Poirier Control Co., Waterville, Me.; Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago 80, Ill.; Tide Water Associated Oil Co., 17 Battery Place, New York, N. Y.; Titanium Pigment Corp., 111 Broadway, New York 6, N. Y.; H. Waterbury & Sons Co., Oriskany, N. Y.; Western Precipitation Corp., 1016 W. 9th St., Los Angeles 15, Calif.

**CHARLES H. REESE**
Retiring President

Representatives of the trade press were guests of Harry Weston at Breakfast, 8:00 A.M., Thursday, June 8.

The Convention was officially opened at 9:30 A.M., June 8, by Charles H. Reese, President of the association. Dr. Theodore A. Loeppert, Lombard Methodist Church, Lombard, Ill., delivered the Invocation. The following

message was submitted by President Charles H. Reese:

## President's Message

Upon accepting the office of President of the Superintendents Association last June, I stated that it was my intention during the succeeding 12 months to meet a large number of our members. My purpose was fourfold:

1. To profit from the experience of many of the officers who had served before me.
2. To obtain the viewpoints of various divisional officers.
3. To discuss the existing status of the association with as many members as possible.
4. To solicit from these members such information as would help in formulating objectives toward which association efforts should be directed.

It is a pleasure to report that one or more of our national officers attended at least one meeting of each division of the association during the year. It was my privilege to visit the large majority of our divisions. In each instance meetings were arranged with the division officers to obtain their viewpoints and to discuss with them the objectives of the association.

Attendance at the divisional meetings was unusually good, which demonstrates the keen interest of our members in these regional activities.

In some cases the need of closer relationship between the individual divisions and the national association was apparent. Regardless of the cause, attention was promptly given to the situation. This action has resulted in considerable improvement through closer contact between national officers and divisional secretaries, as well as with chairmen, vice-chairmen, etc.

From the meetings held with officers of the several divisions, it was clear that more papers by operating superintendents should be given at all association meetings. Our members felt that the association had relied too much upon suppliers for the presentation of papers, and that more interesting and valuable programs would result from more active operator participation.

Maximum benefit results from meetings when a large number of operating men attend and participate in the discussions. To meet these requirements your national officers early last fall outlined a program for our Chicago meeting.

In developing the plan, the chairman and affiliate representative of each division were asked to submit ideas of desirable subjects to be covered at the convention, and to suggest names of mill men who could present papers on these subjects. From this participation by the various division representatives, a large number of suggestions were received. In following through with these suggestions, as might be expected, real difficulty was encountered in obtaining certain of the papers from mill men.

**GLEN SUTTON**
First Vice-President

I am tempted to think that our members constitute a modest group. Whether or not this is so, if the association is to remain a strong factor in the pulp and paper industry, it is imperative that an ever-increasing number of capable mill operators take an active interest in the association.

Our present program does not include papers on all of the subjects that have been suggested. In these undeveloped subjects, is an excellent reserve of ideas for future meetings.

It is clear that a splendid relationship exists between our active and affiliate members. In fact, one of my most encouraging observations is the enthusiastic desire of the affiliates to support, strengthen and expand the activities of the association.

**DONALD R. DICK**
Third Vice-President

One of our weaknesses is lack of representation from many prominent paper companies and inadequate representation from other mills. It has long been an established practice of the association to maintain high membership standards. Some of our members of long standing are now being lost to the association for various reasons. These men must be replaced in our roster of members with younger men at the industry.

A logical approach to the question of membership is tied in with the services offered by the association. It is probable that top management of every progressive pulp and paper mill in the country will insist that their operators become active members of the Association if the services of the association are of sufficient value.

**GORDON K. SINGLETARY**
Second Vice-President

A recent review of our membership list resulted in the removal of the names of some inactive members. Even with this step, the association now has 1523 active members as compared with 1442 a year ago. The past year has also witnessed a healthy growth in our affiliate group. Last year at convention time, there were 148 affiliate members. At present we have 166 members.

The association continues to enjoy the benefits of affiliation with the American Paper and Pulp Assn. Cooperation with TAPPI also has been encouraged. Several joint meetings were held during the year by certain of our divisions, with sections of TAPPI serving the same areas. These two organizations are complementary —not competitive groups.

The press of the industry has given a large amount of space to the coverage of our activities. The staff of Paper Mill News, our official organ,

has continued its good record. To commend all of the individuals who have generously supported the association during the past year would be an impossibility.

Clark Everest, an honorary member of the association, and one of our strong supporters, in a recent talk said, "The formation of the association in 1919 and its continued work over the past 31 years has given tremendous impetus to the improvement, development, and perfection of methods and machinery used in the art of papermaking." Further development is the responsibility that top management of the industry places upon the members of our association.

To meet this challenge, the association must have the active support of a larger percentage of its members. There must exist a close working relationship between each of the various divisions of the association and its national officers. The association must also merit the continued support of the allied industries.

In completing my term as President of the Superintendents Association, I

**A. J. LEIGHTON and GROVER KEETH**

commend both our active and affiliate members, the other officers of the National organization, and all divisional officers for the generous support and assistance they have given me. Whatever progress may have been made during the year has resulted in large measure from their support and assistance.

The following Committee reports were then submitted: Resolutions Committee, Auditing Committee, Nominating Committee.

### Elections of Officers

Election of officers is as follows: Charles E. Ackley, Mill Superindent of the Crown Zellerbach Corp., West Linn, Ore., was elected President. Mr. Ackley was Vice-President during the last year when Charles H. Reese headed the association. The slate recommended by the Nominating Committee was accepted by unanimous vote. First Vice-President: Glen Sutton, Superintendent of the Sutherland Paper Co., Kalamazoo, Mich.; Second Vice-President: Gordon K. Singletary, Plant Manager, Brunswick Pulp &

**HARRY E. HADLEY**
Fourth Vice-President

Paper Co.; Third Vice-President: Donald Dick, Howard Smith Paper Mills, Ltd.; Fourth Vice-President: Harry E. Hadley, Gardner Board & Carton Co.; Fifth Vice-President: Howard H. Street, National Vulcanized Fibre Co.; Board of Directors: Raymond F. Bennett, Ecusta Paper Corp., and Oscar Stamets, retired, formerly of Regal Paper Corp.

### First General Session

The first general session was opened immediately after the acceptance talks by the new officers. The following papers were presented: "Our Civic Responsibility" — James D. Cunningham, President, Republic Flow Meters

**E. T. A. COUGHLIN**

Co., Chicago, Ill.; "How the U. S. Weather Bureau Can Save Money for Paper Mills"—John M. Porter, Meteorologist, U. S. Weather Bureau, Chicago, Ill., "Teamwork Today"—Paul W. Beedle, Management Consultant, Chicago, Ill.

### Wood Room and Woods Operation

The Thursday afternoon session included three group meetings. The Wood Room and Woods Operation group was presided over by Mace Harris, Chairman and R. K. Prince, Co-chairman. Papers included "Wood Deterioration in Storage" by Dr. Thomas Pascoe, Technical Director, Nekoosa-Edwards Paper Co., Port Edwards, Wis.; "Portable Chipper in Woods Operations" by C. G. McLaren, Vice-President and General Manager, National Container Corp. of Wis., Tomahawk, Wis. and "Wood Room Losses and Their Control" by Vance P. Edwardes, Consultant, Corinth, N. Y.

**O. W. CALLIGAN**

### Coated Papers

The Coated Papers Session, held in the West Lounge was presided over by E. T. A. Coughlin, Consultant, Richland, Mich. and O. W. Callighan, Edgar Brothers Co., Kalamazoo, Mich. The papers presented were "High-Grade Offset Papers" by Henry Nendorf, Coating Superintendent, Rex Paper Co., Kalamazoo, Mich.; "Some Phases of Wide-Roll High-Speed Supercalenders" by Dale Sherman, Calender Superintendent, St. Regis Paper Co., Deferiet, N. Y.; "Paper Coating on the Fourdrinier and Press Sections" by Clyde W. Steele, Coating Superintendent, Combined Locks Paper Co., Combined Locks, Wis.; "Experiences with Development of Coated Board" by Harrison, Kindig, Coating Superintendent, Mac Sim Bar Paper Co., Otsego, Mich.; "Some Economic Aspects of Machine Coating"

by William A. Zonner, Sales Development, St. Regis Paper Co., Deferiet, N. Y.; "High Speed Air Jet Coaters" by Norman Bearse, Technical Superintendent, Champion - International Co., Lawrence, Mass.; "Machine Coating of Board on the West Coast" by Bruce Brown, Jr., Chief Chemist, Fiberboard Products, Inc., Vernon Div., Los Angeles, Calif.; and "Champion Machine Coating Process in the U. S. and Foreign Countries" by James R. Simpson, Champion Paper & Fibre Co., Hamilton, Ohio. The last three papers mentioned were presented by title.

### Power Session

Grover Keeth of Marathon Corp.,

R. L. Davis and E. F. Tucker

Rothschild, Wis. and A. J. Leighton of the Babcock & Wilcox Co., New York, N. Y. presided over the Power Session which met in the American Room. The following papers were presented: "Gas Turbines" by Dr. J. T. Rettaliata, Dean of Engineering, Illinois Institute of Technology, Chicago, Ill.; "Resuscitation from Electric Shock" (a demonstration) by the First Aid Team, Public Service Co. of Northern Illinois, Chicago, Ill.; "What We Have Learned About Diesel Engines" by S. E. Tomczak, Plant Engineer, Flambeau Paper Div., Kansas City Star Co., Park Falls, Wis.; and "Calcium Base Sulphite Liquor Burning Tests" by E. H. Kennedy, Combustion Engineering-Superheater, Inc., New York, N. Y. and F. C. Coldwell, Nekoosa - Edwards Paper Co., Port Edwards, Wis.

E. H. Kennedy and F. C. Coldwell

Left to Right—L. R. Barnes, S. Harkavey and Douglas Sutherland

### N.Y.S. College of Forestry Alumni Breakfast

The New York State College of Forestry, Pulp & Paper Alumni met for the first breakfast get-together at 8:00 A.M., Friday, June 9. The following were present: A. McAneny, Bradner Smith & Co.; Howard W. Bartlett, Kelco Co.; R. O. Donoghue, consulting engineer; Earl W. Gutliph, Buckeye Cotton Oil Co.; M. F. Healy, Jr., Kelco Co.; Burt Kassing, Nekoosa-Edwards Paper Co.; James R. Lyon, F. G. Findley Co.; E. P. McGinn, Paper Trade Journal; W. B. Morehouse, Nopco Chemical Co.; Leonard

Carleton Clark and Carl Vicario

American Pulp and Paper Mill Superintendents Annual Banquet

**E. I. STEARNS**

Parkinson, Rhinelander Paper Co.; Charles H. Reese, Nekoosa-Edwards Paper Co.; Edward M. Root, Black Clawson Co.; Louis B. Taylor, Pittsburgh Plate Glass Co.; Carl T. Welte, Champion Paper & Fiber Co.; Harry E. Weston, American Pulp & Paper Mill Superintendents Assn.; L. N. Woodside, Albany Felt Co.

### Fine And Tissue Paper

Three group meetings were held on Friday, June 9 at 9:30 A.M. The Fine Paper and Tissue Group met in the East Lounge. Chairman F. L. Zellers, Chillicothe Paper Co. and Co-Chairman J. C. Dieffenderfer, Hercules Powder Co. presided. The papers presented included "The Practical Art of Color Matching" by Dr. E. I. Stearns and F. O. Sundstrom, Calco Chemical

**F. A. SODERBERG**

Div., American Cyanamid Co., Bound Brook, N. J.; "Filtration and Papermaking" by B. L. Kassing, Nekoosa-Edwards Paper Co., Port Edwards, Wis.; and "Tissue Machine Coating" by John Burdsall, Assistant General Superintendent, Crystal Tissue Co., Middletown, Ohio.

### Sulphite Group

The Sulphite group met in the American Room. R. L. Davis, Detroit Sulphite Pulp & Paper Co., Detroit, Mich., was chairman and E. F. Tucker of Stebbins Engr. & Mfg. Co., Watertown, N. Y., Co-chairman. Papers presented were: "Recent Developments in Acid Making" by Luther C. H. Beighey, Hammermill Paper Co., Erie, Pa., and F. J. Hoar, Stebbins Engr. & Mfg. Co., Watertown, N. Y.; "Production of Neutral Semi-Chemical Sulphite for High Grade Book Paper" by Lawrence W. Murtfeldt, Pulp Superintendent, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wisconsin; and "Use of Disk Refiners in a

**HARRISON KINDIG**

Sulphite Mill" by L. Ebbrhardt, The Bauer Bros. Co., Springfield, Ohio.

### Board Session

The Board group met in the Lincoln Room and was conducted by the Glen Sutton, Sutherland Paper Co., Kalamazoo, Mich., chairman, and Allan Hyer, The Bagley & Sewall Co., Watertown, N. Y., co-chairman. Papers presented to this group were: "Common Faults of Paperboard and Their Correction" by F. H. Stowitts, Vice President in Charge of Mfg., Mich., Michigan Carton Co., Battle Creek, Mich.; "Variables of Papermaking and Their Remedies" by Harry E. Hadley, General Supt., Gardner Board & Carton Co., Middletown, Ohio; "Quality Control in Board Mill" by L. B. Chamberlain, Supt., Container

**LUTHER BEIGHEY**

Corp. of America, Wabash, Inc.; "Effect of Fiber Size Distribution on the Properties of Hardboards Made from Fiberized Water-Soaked Douglas Fir" by S. L. Schwartz and P. K. Baird, U. S. Forest Products Laboratory, Madison, Wisc. Moderator, Glen Sutton, conducted a question and answer period.

### Kraft Pulp & Paper

The Friday afternoon session consisted of three group meetings. Chairman — G. K. Singletary, Brunswick Pulp & Paper Co., Brunswick, Ga., and co-chairman—W. K. Metcalfe, J. O. Ross Engr. Corp., New York, N. Y., conducted the Kraft group which met in the Lincoln Room.

**F. L. ZELLERS**

Papers included: "Results of De-aerating Paper Stock Ahead of a Headbox" by Carleton Clark, Clark & Vicario Co., Bronxville, N. Y.; "Development of the Hydraclone" by W. A. White, Jr., Asst. Chief Engr., Shartle Bros., Machine Div. of Black Clawson Co., Middletown, Ohio; "Review of Kraft Pulp and Paper Industry Waste Disposal Problems and Available Treatment Methods" by Russell L. Winget, Exec.-Sec., National Council for Stream Improvement, New York, N. Y.; and "Alkaline Semi-Chemical Pulping" by J. E. Sapp, Gaylord Container Corp., Bogalusa, Louisiana.

### Mill Maintenance

The Mill Maintenance group which met in the East Lounge, was presided over by Martin J. Auchter, Hoberg Paper Mills, Green Bay, Wis., Chairman, and A. I. Sippola, Socony-Vacuum Oil Co., Inc., New York, N. Y., Co-Chairman. Papers covered were: "High Speed Photography in Paper Mill Maintenance" by John H. Niemeyer, Chicago Representative, Eastman-Kodak Co., Rochester, N. Y.; "Mill Painting and Its Relation to Mill Maintenance" by O. F. Shobe, The Glidden Co., Cleveland, Ohio.

### Anti-Friction Bearing Failures

A Panel Session of Anti-Friction Bearing Failures on Dryers was held with Moderator, U. J. Westbrook, General Supt., St. Regis Paper Co., Pensacola, Fla., presiding. It included papers on: "Maintenance of Anti-Friction Bearings in Paper Machine Dryer Sections" by U. J. Westbrook, General Supt., St. Regis Paper Co., Pensacola, Fla.; "Development of Anti-Friction Bearing Paper Machine Dryers" by E. S. Skinner, Beloit Iron Works, Beloit, Wis.; "Effect of Lubrication on Life of Dryer Cylinder Anti-Friction Bearings" by Stewart Murray, Asst. Chief Engr., SKF Industries, Inc., Philadelphia, Pa.; "Highlighting Dryer Bearing Lubrication" by M. L. Langworthy, Associate Dir. of Technical Service, The Texas Co., New York, N. Y., and R. W. Hall, technologist, The Texas Co., Houston, Texas.

Carthage Machine Co.—Portable Chipper

### Graphic Arts

The Graphic Arts group meeting was held in the American Room and conducted by Chairman J. L. Kubicka, Container Corp. of America, Chicago, Ill. and Co-chairman Richard Tutt, Jr., Peter Cooper Corps., Gowanda, N. Y. Papers included were: "Beautiful versus Successful Design" by Albert Kner, Dir. of Design Laboratory, Container Corp. of America, Chicago, Ill.; "Is It Always the Paper?" by M. H. Bruno, Research Mgr., The Lithographic Technical Foundation, Chicago, Ill.; "A New Approach to Smoothness Measurement" by V. V. Vallandigham, Chemist, Kelco Co., Chicago, Ill.; and "Limitations of Ink Adjustments to Paper" by F. A. Weymouth, Plant Mgr., International Printing Ink, Div. of Interchemical Corp., Chicago, Ill.

First Aid Team Demonstrates at Power Session

The Industrial Affiliates gave a Cocktail Party at 6:00 P.M. on Friday in the East and West Lounges of the Edgewater Beach Hotel for both the men and women. The party was followed by the Annual Banquet in the main Ballroom. Charles Reese, retiring president, was toastmaster. Dancing from 10:00 P.M. to 1:00 A.M. followed the banquet.

A single General Session was held on Saturday morning in the East Lounge. Herbert T. Randall, Champion Paper & Fibre Co., Hamilton, Ohio was Moderator. The Pulp and Paper Mill Superintendent — An Appraisal was the theme of the meeting. The following four papers were presented: "What a Superintendent Should Know Concerning Management" by Charles R. Seaborne, Executive Vice-President, Thilmany Pulp and Paper Co., Kaukauna, Wis.; "The Superintendent and the Engineering Department" by S. L. Foster, Chief Engineer, Kalamazoo Vegetable Parchment Co., Parchment, Kalamazoo, Mich.; "The Superintendent's Function in Research and Technical Control" by A. E. H. Fair, President and General Manager, Alliance Paper Mills, Ltd., Toronto, Ont.; and "The Part Played by a Superintendent in Personnel Relations" by A. S. Anderson, General Industrial Relations, Champion Paper & Fibre Co., Hamilton, Ohio.

The Joint Luncheon was held in the Marine Dining Room at 12:30 on Saturday. Frederick A. Soderberg, Chairman of the Industrial Affiliates Committee was the Toastmaster. The speaker was J. A. Spencer, Manager of Employee Relations, General Electric Co., Schenectady, N. Y. His subject was "Some Hopeful Experiments

in Industrial and Community Relations."

The Ladies Program was planned and directed by a committee consisting of Mrs. Charles H. Reese, Chairlady; and Mrs. Charles Ackley, Mrs. Glen Sutton, Mrs. Gordon Singletary, Mrs. Donald R. Dick and Mrs. Frederick A. Soderberg. The program included sightseeing tours, shopping, luncheon and style show at Carson, Pirie Scott & Co. There were also several affairs held jointly with the men.

### To Meet in Portland in 1951

The American Pulp & Paper Mill Superintendents Assn., Inc., has decided to hold the 1951 convention on June 24 to 29 at the Multnomah hotel in Portland, Oregon, home territory of President-Elect Ackley.

## MILL NEWS

### Masonite To Use G-E Drive at Ukiak

For the first time outside regular saw mill operations, General Electric's amplidyne-controlled log carriage drive will be installed in the break-down plant of Masonite Corp.'s hardboard factory now approaching completion at Ukiak, Calif.

In addition to the complete log carriage drive, equipment to be supplied by General Electric will include a band-mill drive and a 600-h.p. induction motor chipper drive.

The average operating ratings of the log-carriage drive are designed to handle twenty-foot Redwood logs with a full load carriage weight of 46,000 pounds. The Redwood logs, averaging 36 inches in diameter, are driven through the band-mill by the amplidyne-controlled carriage in order to reduce the large logs to a size that can be accommodated by the 28-inch chipper spout. The carriage and band-mill will be capable of handling a log with a maximum diameter of six feet.

The chipper drive makes use of a 600-horsepower induction motor which will be directly connected and operate at a low speed. The function of the chipper is to reduce the logs to chips through a mechanical means. These chips, in turn, are "exploded" into fiber by high-pressure steam. Wood fiber is the principal raw material used by Masonite in the manufacture of hardboards.

The amplidyne-controlled carriage drive, which will provide fast, positive performance, operates as a d-c adjustable voltage system. The amplidyne, a unique type of generator, is similar in appearance to a small motor, and is the heart of the system. It creates an electrical balance which allows the smallest electric signal to release power capable of controlling the largest of machinery.

Safety for the operating personnel is incorporated through the use of overtravel limit switches on the log carriage drive. If under any circumstances, the carriage approaches the end of its normal travel and is still under power, the limit switch is tripped and an automatic emergency control takes over to bring the carriage to a rapid, safe, emergency stop.

### Plans For Duncan Bay Mill

VANCOUVER, B.C. — Definite assurance that plans for the erection of a pulp mill at Duncan Bay in the Campbell River section of Vancouver Island, will be completed, was given recently by J. G. McQuinn, general manager of the Comox Logging Co. in an address to the Kiwanis Club at Courtenay, B.C. He said top executives of the interests concerned were gathering information and an announcement on the project would be made in the immediate future.

### Hawthorne Resumes Operations

KALAMAZOO, Mich.—Work resumed at the Hawthorne Paper Co. May 31, after a production stoppage since May 16.

According to Victor E. Bucknell, attorney for the firm, in behalf of the management: "No reasons existed for the 'wildcat strike'; working conditions and pay rates were not at issue; the labor contract which was subsequently cancelled after the company's efforts to deal with the striking body failed, was not due to expire until August 1; no demands for pay raise or change of working conditions had been made; and the firm had not assumed an anti-labor attitude."

The contract cancelled, the firm declared they would no longer recognize the union as a responsible bargaining agency, and work resumed and the company was in full operation when it reinstated most of its qualified workers who were desirous of returning.

### Gardiner Plans $25,000 Expansion

GARDINER, Me. — Gardiner Paper Mills announced May 26 that an estimated $25,000 expansion program is now underway that will mean additional employment by September 1.

Work is underway to install a new liner system whereby the mills can produce more lined board of the higher grade type. Additional machines are to be installed including stock chests, new beater, stock and water pumps.

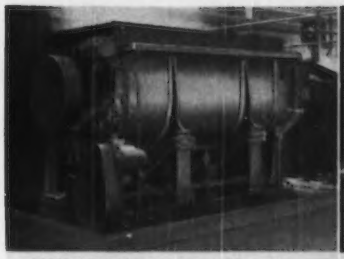
A major project includes installation of a closed system to prevent waste pollution of Cobbossee Stream.

### Insulite Texas Sales Representative

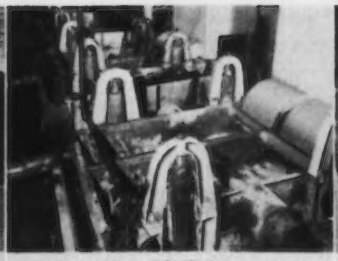
MINNEAPOLIS, Minn. — Francis S. Hauger has been appointed Insulite sales representative in Texas for the Insulite Div., Minnesota and Ontario Paper Co. Mr. Hauger will be headquartered in Dallas and will succeed J. B. Sherwood, formerly assigned to the territory, who has resigned.

## MANDO WATERCRAFT AID IN WINNIPEG FLOOD CRISIS

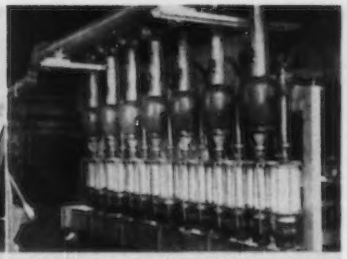
**Mando watercraft which usually operate on Lake of the Woods were pressed into yeoman service on the Winnipeg flood front under an offer by the Kenora division of the Minnesota and Ontario Paper Co. . . . Photo shows 10-ton Mando barge being loaded at Keewatin, Ontario, for 145-mile trip to Winnipeg. To date the Kenora division of Mando has sent to Winnipeg two 30-foot motor boats along with company personnel to operate them, two 10-ton barges, six smaller boats and one 2500 gallon motor-driven water pump. In addition, Mando furnished to the local flood committee 100 single cots, 100 pillows and slips, 100 mattresses and 300 blankets.**



**BIRD SCREENS** — essential for continuous, maximum output of uniformly good paper. Ninety million pounds of paper pass through Bird Screens every day.



**BIRD JONSSON SCREENS** — handle big volumes of high consistency stocks with minimum fibre loss. The ideal knotter (perforate plates) and fine screen (slotted plates).



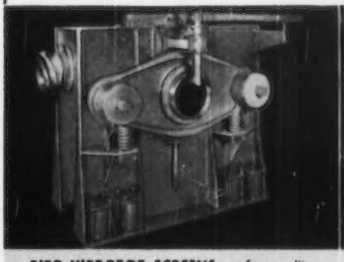
**DIRTECS** — for thorough, efficient removal of heavy and fine dirt both ahead of Bird Screens and as screen tailings units.

# SUPERINTENDENTS ASSOCIATE BIRD MACHINERY

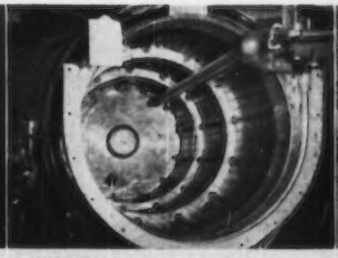
with the making of better pulp and paper and more of it per day at lower cost per ton.

For bulletins, recommendations, layouts or estimates on any or every one of these proved production and profit boosters, get in touch with

**BIRD MACHINE CO. • South Walpole, Mass.**

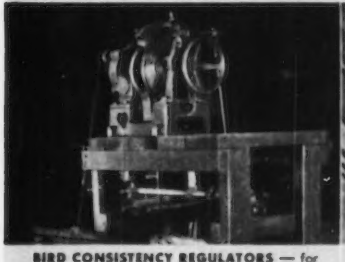


**BIRD VIBROTOR SCREENS** — for quality screening of bleached or unbleached pulp. Handles 50 tons per day through .012" plates at 1.3 to 1.5% consistency.



**SHOWER PIPES** — both Self-Cleaning and Oscillating. The Bird Oscillating Shower, pictured, increases screening efficiency, uses far less water.

**BIRD SAVE-ALLS** — for low cost recovery of good fibres from machine waste water. Quickly pays for itself out of net savings in stock, water and time.



**BIRD CONSISTENCY REGULATORS** — for holding stock consistency to not more than 0.1% heavier or lighter than desired. Dependable, economical, trouble-free.

**VICKERY FELT CONDITIONERS** — for keeping press felts continuously clean and absorbent without mid-week shutdowns. Improve paper finish, speed drying, save steam.

**VICKERY DOCTORS** — carefully engineered for application to each individual press roll, wire roll, dryer, calender and super-calender roll.

### Empire Pulp Files Petition

UTICA, N.Y.—A petition seeking a settlement with creditors on the basis of 15 cents on a dollar has been filed in Federal Court here by the Empire Pulp and Paper Co., Inc., manufacturer of paper and paper products of Marcellus Falls, operated by Glens Falls, N.Y., interests.

The reorganization petition listed liabilities of the company at $99,135, of which $96,989 is unsecured, and assets of $14,934, of which merchandise is $10,950 and accounts, $2,693. The company was incorporated in March, 1949.

The proposed settlement provides that claims for a total of $28,730, held by the Yanklowitz Waste Co. and the Yanklowitz Paper Corp., Glens Falls, shall not participate in the 15 per cent payment. While the company asks to be retained in possession of the assets, under supervision of the Court, the business would not be continued.

Federal Judge Stephen W. Brennan referred the case to Referee David J. Goldstein, Utica, who will call a meeting of the creditors to consider the offer.

### End Walkout At St. Regis

WATERTOWN, N.Y.—The 122 striking machinists and electricians are back at their jobs for the St. Regis Paper Co. at Oswego and Deferiet after a two-day walkout.

The strike came to an end on June 7 without the unions having achieved their demand for a 17-cent an hour wage increase in addition to the five cents offered by the company last April.

The issue is now up to the National Labor Relations Board but there is no indication when it will be settled.

The decision to return to work and submit the dispute to the NLRB followed a meeting in Oswego. The company claimed that the two unions violated the April agreement, although no contracts had been signed by them. The two unions maintained that they never backed the agreement which all of the other unions of the company signed.

During the strike many of the nonstrikers crossed the picket lines placed at both mills. The strike started June 5, but only 122 out of a total employment of 1,520 were out.

### Nivison Transferred to Boston

BOSTON—The headquarters of Robert Nivison, vice-president and manager of mills of Hollingsworth & Whitney Co. will be transferred from Waterville, Me. to the executive offices of the company in Boston, where Mr. Nivison will take up his duties on September 1.

Mr. Thomas M. Barry will be promoted from assistant manager to manager of the northern mills, with headquarters at Waterville, effective August 1.

### Superfine Gets Beloit Machine

UTICA, N.Y. — A $35,000 machine that will turn out 100,000 rolls of toilet tissue or 50,000 boxes of facial tissue a day has been shipped to the Superfine Paper Mill, Clayville.

W. H. Moon, plant superintendent at the mill, an affiliate of the Sitroux Co., Utica, will have the job of installing the equipment in the plant. It is expected to take four to six weeks.

It was shipped from the Beloit Iron Works, Beloit, Wis., where it was made and assembled.

### Fire Destroys Kennedy Plant

OTTAWA — A disastrous fire destroyed the machine shop of William Kennedy & Sons' plant in Owen Sound, Ont., causing loss estimated at over $500,000. The company is a producer of mill equipment for the paper industry. The machine shop covered about a third of the area occupied by the plant.

### Mersey Paper's Labor Relations

LIVERPOOL, N. S.—Mersey Paper Co. continues to maintain amicable relations with labor despite general unrest throughout the continent. Word released by plant officials show increases all along the line averaging about five percent.

A new clause in the contract gives fifteen-year-men an annual three week paid vacation. The company also promised relief from excessive noise in the plants in the near future. The three week vacation clause was heralded as an indication of things to come by Maritime labor where only Government jobs have provided this in the past.

### Parker Heads Nat. Conference Board

MILWAUKEE, Wis.—Cola G. Parker, president of the Kimberly-Clark Corp., Neenah, Wis., has been elected chairman of the board of trustees of the National Industrial Conference Board.

Mr. Parker was elected a board member in 1943 and a trustee in 1946. The nonprofit organization was founded in 1916 to study, explain and distribute business information essential to setting management, labor and government policy.

### Gair Co. Canada Changes

OTTAWA—Gair Co. Canada Ltd. has elected Charles E. Whitten as president and general manager to succeed George W. Brown who died June 1.

Formerly vice-president and treasurer, Mr. Whitten has been with Gair Co. since its inception. A native of St. John's, Newfoundland, he lived in Montreal, Que., before coming to Toronto in 1930.

W. Russell Eccles, formerly assistant treasurer, has been appointed treasurer. Harold L. Steele has been elected to the board of directors to fill the vacancy left by Mr. Brown's death.

### Pollution Control Plan

WASHINGTON, D. C.—Broad outlines of an industry-Federal approach to water pollution control of industrial wastes have been drafted by a national technical committee appointed at a two-day conference May 9-10, of Federal officials with representatives of 22 of the leading industries concerned with industrial waste disposal.

The committee has also named three immediate objectives of the control plan, including assemblage of a source list of existing processes and practices employed in using, treating and controlling industrial wastes; tabulation of research projects concerned with the problem, and listing of problems confronting any given industry group, particularly where more than one industry may be affected, and for which there is no present satisfactory solution.

Lyman Cox, waste disposal consultant, E. I. duPont deNemours & Co., Inc., Wilmington, Del., was named chairman of the National Technical Task Committee on Industrial Wastes which drew up the above program; he is also chairman of the Water Pollution Abatement Committee of the Manufacturing Chemists Assn., Washington.

Earl Devendorf, Director of the Bureau of Environmental Sanitation, New York State Department of Health, was named as liaison for the committee with the various state governments; Vernon G. MacKenzie in charge of the Public Health Service Environmental Health Center, Cincinnati, was named as liaison with the Cincinnati laboratory. It was pointed out that the Cincinnati laboratory will serve as a valuable source of information and technical assistance to industries confronted with unfamiliar waste disposal problems.

The next meeting of the committee will be held in Cincinnati, it was announced, at a date in October.

Other members of the committee designated at the recent meeting include: vice chairman — Dr. Harry Gehm, technical director, National Council on Stream Improvement of the Pulp, Paper and Paperboard Industries, Inc., New York, N. Y.; secretary—Louis F. Warrick, chief, Technical Services Branch, Division of Water Pollution Control, Public Health Service, Federal Security Agency.

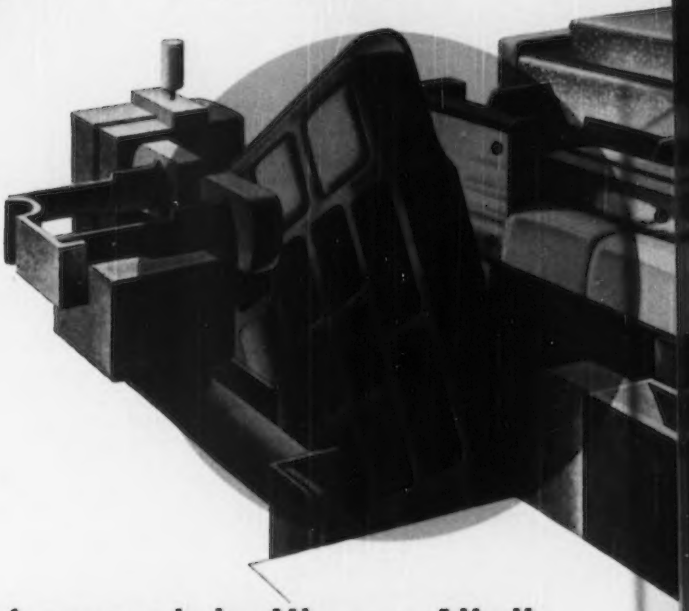
Chairman Cox said that other interested industries were expected to join in the work of the national committee. He reported that the railroads, lumber, paint and varnish, and power production industries, as well as the cane sugar, fish and poultry, and food freezing industries, will be invited to join in the near future.

### Ecusta Names Collisson

PISGAH FOREST, N.C.—Ecusta Paper Corp. announces the election of Norman H. Collisson to the office of vice-president, effective May 9, 1950.

## *as you were in 1900*

Many soap-making operations were done by hand; so were some of the processes involved in paper, textile and glass manufacturing as well as water purification and sewage treatment.



## *as you are today*

Sanitary, efficient machine operations replace the old hand processes in soap manufacture.

# . . . with 50 years of research by Niagara Alkali

Gigantic kettles four stories deep . . . capacities as high as 175 tons . . . these are the superlatives in which soap-makers are planning—and working —today. Every step in soap manufacture is absolutely controlled to assure a uniform and superior product.

Niagara Alkali, now observing its 50th anniversary, is likewise able to assure the uniformity and superiority of its products—the result of continuous research to achieve product control and efficiency. The success of this research is reflected in Niagara's ability to serve many fields well: paper, soap, glass, textiles, sewage treatment, water purification and others.

**NIAGARA ALKALI COMPANY**

**60 East 42nd Street, New York 17, N. Y.**

Liquid Chlorine • Caustic Potash • Carbonate of Potash • Paradichlorobenzene • Caustic Soda
Niagathal (Tetrachloro Phthalic Anhydride) • NIALK TRICHLORethylene

# New York Pulp and Paper Manufacturers Organize Stream Improvement Activities

At a meeting held at the Ten Eyck hotel in Albany on May 25, 1950, under the auspices of the National Council for Stream Improvement (of the Pulp, Paper and Paperboard Industries) Inc., a permanent committee of New York State pulp and paper manufacturers was organized to deal with industry stream pollution problems in the state. The committee which will be known as the New York Section of the National Council for Stream Improvement (of the Pulp, Paper and Paperboard Industries) Inc. will consist of one representative of each pulp and paper manufacturer in the state. The committee elected as chairman, Benton R. Cancell, vice-president, St. Regis Paper Co., and as vice-chairman, Harry M. Gray, general manager, Oswego Falls Corp. The following executive committee was appointed: P. S. Bolton, Robert Gair Co., Inc.—Lower Hudson River area; M. J. Neubauer, West Virginia Pulp & Paper Co.—Upper Hudson River area; J. H. Heuer, St. Regis Paper Co. —East Lake Ontario Region; H. P. Bailey, International Paper Co.—West Lake Ontario Region; James Rogers II, J. and J. Rogers Co.—St. Lawrence Region.

The matter of stream pollution has assumed considerable urgency in the state of New York as the result of the passage in 1949 of Chapter 666 of the laws of the state better known as the "Water Pollution Control Law." Under the provisions of Section 109 the waters of the state will be classified and standards of quality for each classification adopted.

At the meeting held in Albany the necessity of each mill in the state assessing its position in relation to proposed water standards and investigating available waste treatment methods, if and when required, was urged. Preliminary plans have been made for the survey of a number of the water sheds on which the pulp and paper industry is located by National Council field men to determine the nature and extent of paper industry pollution. Rivers slated for first investigation by the National Council are the Black and Oswegatchie Rivers in Western New York and the Upper Hudson and Mohawk Rivers in Eastern New York. A meeting to discuss procedures to be used in this field work will be held in Deferiet on June 20.

Earl Devendorf, Director of the Division of Sanitation, New York State Department of Health, and A. F. Dappert, Executive Secretary of the Water Pollution Control Board, New York State Department of Health, addressed the luncheon gathering which was held following the organization meeting on May 25, and submitted pertinent information regarding state operations under the new law. Mr. Dappert pointed out that the state is currently surveying the Rondout and Walkill Rivers and that the report on this survey will probably be completed by September or October of this year. Mr. Dappert further indicated that the state survey of the various water sheds in the state of New York will probably require some ten years to complete, and before any classifications for any particular water sheds are adopted there will be public hearings so that those interested may present their viewpoints.

### Newsprint Cut Feared By Press

CHICAGO—The Inland Daily Press Assn. on May 23 demanded that Canadian newsprint producers announce whether they plan to cut shipments to American newspapers in the next 18 months.

The association said it fears that Canadian paper mills will slash some American orders to supply European demands.

### U. S. Newsprint Imports

WASHINGTON, D. C.—Newsprint imports for consumption into the United States totaled 765 million pounds, valued at $35,600,000 in March, compared with 696 million pounds the previous month, valued at $31,700,000, the Commerce Department reported this week.

Imports a year earlier were 785 million pounds, valued at $37,400,000.

Woodpulp imports this March totaled 201,000 tons, of $19,500,000 value, compared with 184,000 tons in February, valued at $17,300,000.

### American Box Board Names Oldenberg

EAST LANSING, Mich. — John S. Burns, sales manager of American Box Board Co., Grand Rapids, Mich., resigned as vice-president in charge of sales on May 26 because of ill health. Mr. Burns retired from active duty in 1949.

Fred W. Oldenberg, sales manager of the western district has been appointed general sales manager.

### Probe Newsprint 'Monopoly'

WASHINGTON—The newsprint industry will come under the scrutiny of a House Monopoly Investigating Committee in hearings beginning June 19.

The date was announced May 24 by Rep. Celler (Dem., N. Y.), committee chairman.

### Pacific Coast Mills Grant Increase

PORT ANGELES, Wash.—On May 17 pay increases of 3 per cent, which is the equivalent of about 7½ cents an hour, and added holiday and vacation benefits for 15,000 AFL workers in Pacific Coast pulp and paper manufacturing plants were offered. This statement was made at the close of eight days of negotiating for the workers in 35 Washington, Oregon and California plants.

The 3 per cent pay boost put the base rate at $1.47 an hour for men and $1.20 an hour for women, according to the statement.

Three additional paid holidays — New Year's, Memorial Day and Thanksgiving—were added and a third week of paid vacation after 15 years service was approved. The agreement calls for continuation of joint state safety conferences.

Negotiations were between the Pacific Coast Association of Pulp and Paper Manufacturers, for the employers, and the International Brotherhoods of Papermakers and the Pulp, Sulphite and Papermill Workers.

Chairmen at the meeting were John Sherman, Tacoma, Wash., vice-president of the paper mills workers, for the unions, and A. R. Heron, San Francisco, vice-president of Crown Zellerbach Corp., for the employers. Other union representatives were John Burke, Fort Edward, N. Y. and Iver

### Brown Corp. Elections

OTTAWA — Brown Corp. has elected H. G. Brush, vice-president and treasurer; A. B. Walker, La Tuque, Que., controller; J. A. Jones, George Matte, La Tuque, Que., C. G. Raeburn, Berlin, N. H., assistant secretaries and treasurers; H. J. Humphreys, Montreal, Que., assistant secretary; and Gordon Brown, assistant to the president.

### Satterwhite Mgr. of Taprell Loomis

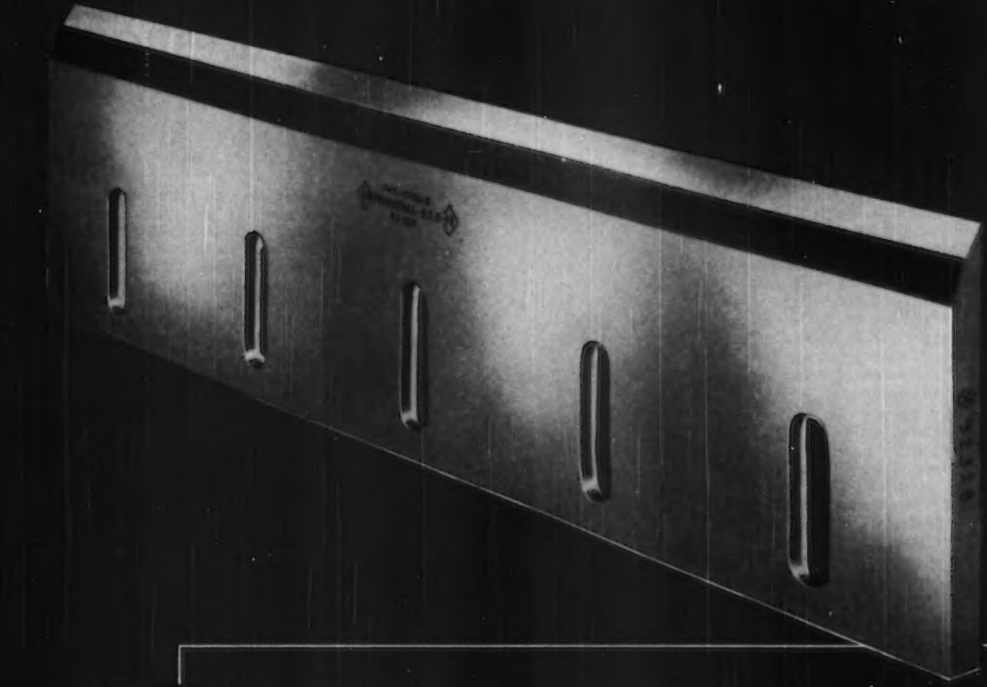
ROCHESTER, N. Y.—Fletcher H. Satterwhite has been appointed manager of the Taprell Loomis division of Eastman Kodak Co.

Ralph T. Monahan has been named to succeed Satterwhite as sales manager of the division.

Taprell Loomis is the Kodak plant in Chicago which makes photographic mounts and albums.

### V. G. Cornelius Joins Rotarians

APPLETON, Wis.—Vernon G. Cornelius was elected a Rotarian June 9. Mr. Cornelius is secretary-manager of Pulp & Paper Mfg. Assn. of the Lakes States. He brings to Appleton Rotary a wide experience in personnel and public relations problems.



## YIELDING MORE UNIFORM CHIPS!

HEPPENSTALL

# Some Hopeful Experiments In Industrial and Community Relations

JOHN A. SPENCER[1]

I am speaking to you today as a group of practical operating men, not as a group of crystal gazers or wishful thinkers or as trained psychologists. I I hope to define some of the problems in industrial relations with which, I believe, we are all confronted. I shall tell you of our experience in attempting to cope with these problems. At the same time, I wish to assure you that we have no magic formula and no guarantee of success.

Again let me say that our purposes and objectives are not vague and illusionary, and we are attempting to approach our problems, not as happiness boys or professional do-gooders, but as businessmen confronted with an operating problem. We have this problem, not of machines, or of materials, but of men, and we must analyze it and plan to attack it with the same intelligence, vigor, and imagination that we use when confronted with problems in engineering, marketing, or production.

What is our problem? I believe I am safe in assuming that all of us in industry have over the past 15 years seen gradual but significant changes in the attitude of employed people, particularly in these areas:

First, in the satisfaction and pride of accomplishment resulting from doing a good day's work

Second, in the relations between the employee and "His company"—friend or enemy?

Third, in reliance placed upon security—not necessarily provided by the thrift and industry of the individual

Fourth, in the susceptability to the crackpot something-for-nothing appeals of bureaucrats.

What factors brought about this problem? Any number of factors have been mentioned as having had an influence upon the attitudes of many of our people. Among them we must certainly recognize:

First, the great depression of the early 30's with its widespread suffering instilled deep in the hearts of many people a desire for security—at any cost and from any source. This depression also aroused grave doubts in the minds of many people concerning the advantages of our American economic system which could so stumble and almost come to a halt, and leave the greatest industrial nation in the world frightened and insecure.

Second, along with the depression there came a change in our government and with it, New Deal philosophies which led many people to the conclusion that there could be security only in a large all-powerful mothering government which would somehow take care of everyone in want—through jobs if jobs were to be had, but if not, through relief in one form or another. Where the government was to obtain the money for this unfailing generosity was not important. "Soak the rich" was as good an answer as any.

Third, World War II of course had a tremendous effect upon millions of our younger generation. Over a considerable number of years our young men and women were in a strict military atmosphere of authority, command and obey. Someone else did the planning. Their job was to carry out orders. After the War came further regimentation in many instances. While I shall be the last to question the motives of the G.I. Bill of Rights and the unquestioned good it did for many individuals, the fact remains that many young men elected to pursue a higher education under this bill for another two or three or four years because they were "secure" with a regular monthly income. If they became married, their income increased. If they had children, their income further increased. Their first question upon looking for a job upon graduation was "What will be my security?" Married men, in all seriousness, asked if they shouldn't be paid more money for similar jobs than single men because they had greater personal responsibility. Somewhere along the way personal initiative, resourcefulness and daring had fallen by the wayside, in many instances.

Countless studies have convinced us that our most serious morale problem, as well as lack of understanding of our free enterprise system, lies unfortunately with our younger people. In our own research and that of outside agencies we have found that our older employees with 10 years or more of service very generally are better satisfied with their jobs, have a greater sense of individual responsibility, and greater pride in their work, and are better satisfied in their opportunities with their employer. Of course, some older employees are also far from contented in their jobs, and our programs are directed to all employees regardless of length of service.

What steps can be taken to break this problem down into its fundamental components, and what action can be taken to meet the challenge? First, we analyzed what our people want in their jobs. Through interviews and questionnaires, we asked them what they wanted. They are simple things, and they are common to almost everyone. We came up with nine fundamental requirements. The number is not important, but I believe you will agree that our list includes those elements which you and I and all employed people want in their jobs. Here is the list:

1. Good pay. 2. Good working conditions. 3. Job security. 4. Good bosses. 5. Fair promotion practices. 6. Respectful treatment. 7. Full information. 8. Belief in job's importance. 9. Job satisfaction.

It is *top* executive responsibility to see that a company's performance in three of these areas is right.

*Good pay*—fair pay is essential. A company must bring its pay policy out from behind the brass curtain, take a look at it, and be sure that it will stand the cold light of employee scrutiny. We find that an employee is satisfied with his pay if we meet two general requirements. First, there must be, in fact and not just in policy, a payment of

[*] Presented before the Annual Meeting of the American Pulp and Paper Mill Superintendents Assn., Inc., Chicago, Ill., June 10, 1950.

[1] Manager, Employee Relations Apparatus Department, General Electric Co., Schenectady, N. Y.

# APPLETON *Felts*

—FOR DESIGN AND FINISH

—FOR SERVICE

—FOR UNIFORMITY

—FOR DEPENDABILITY

make APPLETON FELTS good paper

**APPLETON WOOLEN MILLS**

APPLETON · WISCONSIN

equal pay for equal performance and responsibility between individual employees. Second, that we pay a rate which is fair in relation to that paid in the community for similar skill, training and responsibility. We have given new attention to this problem, and are doing a better job although the task is tremendous.

*Working conditions* must be clean and comfortable, not requiring in every instance extensive outlays for brass and plush, but requiring adequate light, ventilation, and elbow room to work under comfortable conditions.

*Job security* is a top management problem, and it is up to all of us to do a better job in ironing out the peaks and valleys of production so that people can depend on a steady income —not: overtime one month and layoffs the next. Industry must simply do a better job in this area, and our top management is devoting much attention to this great problem.

You will notice that the other six elements of our 9 point job can be provided to the employee by his immediate supervisor. It has been proven again and again that a man's immediate boss has the greatest single influence on the job satisfaction of any employee at whatever level. This responsibility of the boss starts at the very top with the chief executive because his attitude and performance in the area of human relations goes down through all levels of management to the grass roots of every business. There is an old Turkish proverb that says that "a dying fish starts to stink at the head."

Napoleon said "There are no poor regiments; there are only poor colonels." This opportunity and responsibility of every boss in the organization led to the following program:

**Experiment #1—Training the Boss—at all levels of management**

We developed a training course for our supervisors which involved three basic components:

You can't expect a supervisor to believe in his company and provide the proper atmosphere of approval for his people unless he himself is satisfied with his own job—including his relationships with his supervisor. *Part 1* of our training program was called the "gripe session." Starting with the president of our company and going down to the foremen, each supervisor was given a personal interview by his supervisor in order to bring out into the open all areas of dissatisfaction and discontent. We developed a self-rating questionnaire containing 100 points on which a supervisor could rate himself as to how he treated the people under his direction. The information received from these contacts was studied and codified. Now, we knew our "don't likes."

*Part 2* consisted of 16 weekly training sessions for each supervisor. Training included the areas of leadership in human relations, interviewing the individual employee, basic economics, and explaining how to handle the "don't likes" about a G.E. job as they might be expressed by the individual employee. Some of these "don't likes" were only partially susceptible to full or partial correction by supervisors. But in each case, the supervisor was given a full explanation of the basic policy or circumstances behind a particular practice. Most of the "don't likes" were the result of misinformation and prejudice which the supervisor could correct if he had the proper facts and technique.

*Part 3* is a continuing program which consists of additional training courses in human relations and in communication. For instance, we make extensive use of a course known as "Principles and Methods of Supervision" developed by the Sales Analysis Institute. Supervisors are constantly being urged to conduct a continuing "talk it over" program with their people in order to establish and maintain good two-way communication.

**Experiment #2—Economics Education**

We found that many of the perplexing questions which confront our employees, yes and that certainly includes our supervisors, stem from a complete lack of basic economic information and understanding. In my previous point, I mentioned a training in basic economics which we have given to our supervision. I can't stress the need for this education and training too strongly. If our people do not understand something of the functioning of our economy; of the relative position of stockholder, management and employee; of the necessity of profit to a successful enterprise and steady jobs; of the definite fixed relationship between productivity and real wages, our great system is loomed to collapse into extinction.

We are already hellbent down the road to a welfare state and socialism primarily because our people don't understand basic economics. I don't need to point out to you men what we have in this country. We have an economy that can provide more than 60,000,000 jobs with an annual earned income of well over $200,000,000,000. We have an economy that will produce and sell in 1950, five million automobiles, five million television sets, three million washing machines, and on and on to a total retail trade that in this year will approximate $125,000,000,000. Total construction for the year 1950 is expected to be about $20,000,000,000.

Yet in such an atmosphere, we can't balance our budget. We can't live up to the good old American axiom that we should pay our way as we go. An excellent document, the Hoover Report, gathers dust while politicians think of new ways to spend money. These remarks are not directed toward any political party but at bureaucrats in general. Unfortunately, bureaucracy and collectivism do not confine themselves to party lines.

I need only mention the propaganda toward socialized medicine, a sure step toward the socialism of England; the Brannan Plan, a fantastic formula for maintaining farmers' incomes upon a plateau, providing controlled reduced prices to consumers, and letting the deficit accumulate. Our present policies through the paying of farm subsidies have created a stock pile of surplus farm commodities that cost us around $9,000,000,000. We have a hundred million pounds of butter, 475 million bushels of wheat, 1 billion, 148 million bushels of potatoes, to give just a few examples under our present program.

The proposed Social Security Program will, if projected according to present plans, cost us and our children from 15 to 20 billion dollars a year by 1975.

We find ourselves in this plight with business discredited and free enterprise on the defensive because, we believe, the great masses of our voters have been lured into a something-for-nothing frame of mind. In their search for security they are fair game for the bureaucrats and statists who are building government and political empires.

Recently the "Memphis Commercial Appeal" carried the following parody on the Twenty-third Psalm:

"The State is my shepherd, I shall not work; it maketh me to lie down on good jobs, it leadeth me by the still factories. It deadens my soul: it leadeth me in the paths of idleness for politics' sake. Yea, though I walk through the valley of slothfulness and economic disaster, I will fear no evil, for it will be with me; its dole and paternalism, they comfort me. It prepareth a Utopia for me by appropriating the earnings of the frugal; it filleth my head with fool expectations; my mounting inefficiency runneth over. Surely goodness and mercy shall follow me all the days of my life; I shall live on the bounty of the State forever."

We need to fight now before it is too late. We believe our best weapon in this fight is the understanding which can only come through exposure to and training in horse-sense basic economics.

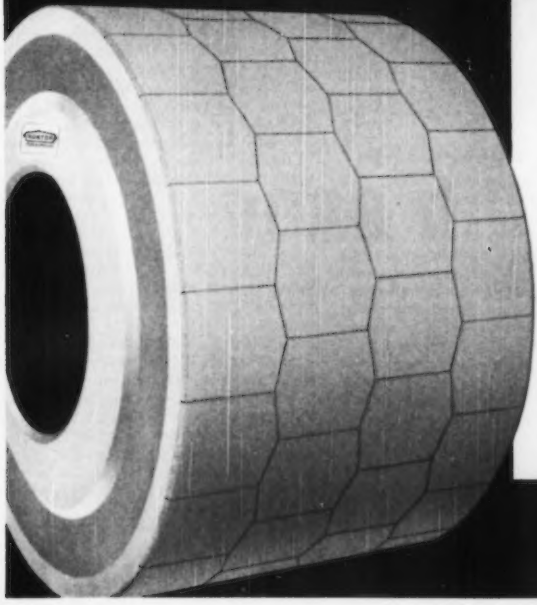
During the past year and a half every supervisor and professional employee—almost 10,000 in number—in our department, has taken intensive training in simple basic economics. Part of this group took an excellent 13 week course developed by the W. H. Stevenson Company of Chicago. We also added to our staff an outstanding economist, Neil Carothers, Dean of the School of Business Administration at Lehigh University, to conduct a series of 9-session courses on our economic system. Almost to a man, those who have taken these courses have expressed their appreciation and belief in their value. For the first time, they feel themselves able not only to understand our economics system, but to talk about it convincingly.

Dean Carothers also prepared for us

ROLL GRINDING
KNIFE GRINDING
SLITTER GRINDING
LABORATORY WARE
REFRACTORIES
GRINDING MACHINES

# PULPSTONES

## NORTON has Real Engineering Help
### on all These Products for the Pulp and Paper Industry



YES, that's what you get from your Norton pulpstone engineer — *really helpful engineering service,* not only on pulpstones but on the many other Norton products that serve the pulp and paper industry.

He will study your particular pulp requirements, your type of wood and your equipment. From that he'll recommend a Norton stone of just the right kind of abrasive, grit size, hardness and structure to meet your mill conditions.

And behind him at Worcester he has available skilled engineers on abrasives and grinding wheels for knife grinding, roll grinding and other applications, experts on high temperature refractories and porous mediums, on grinding machines, and the many other Norton products.

**NORTON COMPANY, WORCESTER, MASS.**
**Norton Company of Canada, Ltd., Hamilton, Ont.**

NORTON

a series of punchy, colorful, interesting articles on economics which we are publishing serially in our works newspapers which reach all of our employees. The title of the series is "Is Your Economics on Straight?"

We can't yet tell what the results of this series will be with the men in the shop, but we have some encouraging reports.

This same experiment in economics education has been extended into the area of community relations. Our definition of the scope of community relations is very broad. We feel that the stakes are so high in this fight for understanding that we should encourage other employers, as well as the usual community groups, to participate also in a broad program of economics education. As an individual company, we might succeed but collectively fail if ours is a single effort. Consequently, we have pushed the frontiers of this economics educational job out into the community. In Schenectady the Lions Club was the first civic organization to sponsor an economics training project. A Stevenson-trained leader led 12 spirited meetings which were attended by more than 500 citizens of the community.

The Citizens Foundation of Syracuse recently completed another such project and maintained an enthusiastic audience attendance of more than 600 citizens for a 12 weeks course. Grand Rapids, Worcester and Bridgeport have completed similar projects. Other cities are preparing to start.

As a personal challenge to you, I know of no more worthwhile activity than the stimulation of economics training in your own individual companies and communities. We in General Electric don't feel that our job in this area is by any means completed. Additional economics training programs are being developed, and we expect to continue to hammer away at this problem that confronts us all.

#### Experiment #3—Messages to Employees

Our experiment in direct communication with our employees has run concurrently with the experiments previously mentioned.

About two years ago, we began a series of messages to our employees which appear as full page statements in our works newspapers. These messages are timely and informative. They plow right into the heart of controversial subjects. They "speak out." They are the hard facts of business, of economics, of government.

They have covered a wide variety of topics. For example:

Why does food cost so much?

Why can't you buy a house at a decent price?

Who told you these fairy tales?

Thrift is needed to curb inflation.

How to have two cars in every garage.

Most of these messages are reprinted as advertisements in our plant city newspapers and then published in a four page leaflet called "The General Electric Commentator" which is now sent to approximately 100,000 important business people, thought leaders, and educators throughout the country —a circulation which has been built up almost entirely by request.

We have carefully tested the readership of these messages by our employees. The majority of our people read them and believe them—they admire the management that "says it isn't so" about the phony economics and propaganda of radical union leaders, selfish politicians, and bureaucrats. Your people and ours are seeking truth and leadership.

#### Experiment #4—Management Informative Conferences

Management Informative Conferences represent the best device we have been able to develop for systematically informing all levels of supervision. Under this plan every supervisor—in manufacturing, engineering, sales, financial—is assigned to one of a number of conference groups, each made up of approximately 12 members. Chairmanship of the group is rotated among the members for experience in conference leadership, and the makeup of the group provides a wide experience range and variety of viewpoint.

Regular meetings are scheduled every two weeks and last for about an hour. A coordinator devotes practically full time to preparing material for use by all groups. Topics selected for the meetings are of sure-fire interest since they provide the basic facts and data concerning important decisions and progress in each area of the business. Time is also provided for general discussion of those questions which members of the group may raise on an informal basis.

In this plan we really take our supervisors at all levels into the management group. Results from this program have been uniformly good with greater job satisfaction for our supervisors and a greater feeling of participation in the entire sweep of the business.

#### Experiment #5—Employee Round Tables

Here is the experiment which we feel has tremendous possibilities in re-establishing confidence and warm, friendly regard between the worker and his boss. Most training programs in the areas which we have discussed have been directed toward the supervisor and have ended approximately at the foremen level. We are now certain that we have found a means of establishing contact between the supervisor and his people which is in the proper climate—the proper atmosphere of approval for a sincere free exchange of ideas and information.

An Employee Round Table, as we call it, is a regularly scheduled meeting of a foreman or supervisor and a group not to exceed 15 of those he supervises. These meetings are held in quiet conference rooms away from the noise and distraction of the immediate shop. No one else is present. The foreman is alone with his people. In this atmosphere, the foreman first informs his people of those items which he believes to be of the greatest interest to them—the production rate of the individual section, the rate of incoming orders, the rate of profit, the acceptability of the work of the unit, its productivity, safety, its performance in waste and scrap loss. This information is given freely. It's accurate.

After the foreman has presented the facts which he has prepared, the meeting is open for questions. No questions are barred except those involving matters of union contract. The supervisor is instructed to answer questions fully and honestly. He must never bluff. If he doesn't know the answer, he agrees to get the answer and provide it in writing in the form of minutes within a short time after the meeting.

By September 1 every supervisor in our department will be regularly holding Employee Round Tables so that each employee will participate in such a meeting at least four times a year. Hourly rate of average earnings are paid to non-salaried employees. In the month of May, for instance, 1,132 such Informative Meetings were held involving approximately 12,000 of our people.

We have watched the growth and development of these Round Table Meetings with great care. The results are twofold. Such meetings provide the finest foremen training which we have yet seen. Second, our non-supervisory employees are showing by their enthusiasm for these Round Tables that they now feel that they are being taken into the Company's confidence, and that their ideas are appreciated. Here are some reasons which our employees give for their enthusiasm for these Round Tables. I quote:

"Get to know foreman better." "Break down the gap between you and the foreman." "You often win needed support or cooperation to do your own job better." "Lots of methods are improved as a result of meetings." "You get a chance to present problems to the foreman when he has time to think." "You have a say in decisions; you are surprised to learn that what you say is important." "You get to know what everyone else does; you get to know what the whole thing is about."

We have prepared a booklet to assist our supervisors in preparing themselves to hold Round Table Meetings. I shall be glad to send you a copy upon request.

Gentlemen, I have called these programs hopeful experiments. Some of them are now passing out of the experimental stage and have proved their effectiveness. Our job is far from completed. We realize that the over-all success of these activities will depend upon a genuine desire on our part to provide a job which is really good, to inform our people of the why's and wherefor's of our business, and to provide bosses who are human beings. Our accomplishment is far from complete. Yet we feel we are on the road toward better employee and human relations.

To men of the Pulp and Paper industry interested in the alkaline pulping process...

**DORR OFFERS...** Bulletin #3301, containing twelve pages of photos, diagrammatic sketches and text descriptive of the Dorr Continuous Recausticizing System. A copy is yours for the asking.

DORRCO

**THE DORR COMPANY, ENGINEERS**
BARRY PLACE, STAMFORD, CONN.

NEW YORK • ATLANTA • TORONTO
CHICAGO • DENVER • LOS ANGELES

**RESEARCH AND TESTING LABORATORIES**
WESTPORT, CONN.

**SUGAR PROCESSING**
PETREE & DORR DIVISION, STAMFORD, CONN.

**ASSOCIATES AND REPRESENTATIVES**
Dorr Technical Services and Equipment Are Also Available Through Associated Companies and Representatives in the Principal Cities of the World. Names and Addresses on Request.

DORR

**RESEARCH — ENGINEERING — EQUIPMENT**

# Maintenance of Anti-Friction Bearings in Paper Machine Dryer Sections

V. J. WESTBROOK

General Superintendent, St. Regis Paper Co., Pensacola, Fla.

Progress in the art of papermaking in the past two decades has resulted in the development of higher speed paper machines. The modern high-speed paper machine is designed and constructed for top speeds of from 1500 to 2400 feet per minute. The installation of more dryers per machine, higher steam pressures, and conversion from the conventional sleeve type bearing to anti-friction bearings in the dryer sections became necessary before the present operating speeds could be attained successfully. As is usual in the ordinary course of progress, when we attempt to do things that have not been done before, we find that there are certain unanticipated problems that must be met and solved before we can operate satisfactorily under the new conditions.

This paper is an attempt to present from a mill operator's point of view some of the problems encountered in the care and maintenance of anti-friction bearings in the dryer sections of high-speed paper machines. The object in so doing is to bring these problems to the attention of other mill operators, the paper machine builders, the bearing manufacturers and the lubricating engineers.

The dryer bearing in general use on a modern machine is of the spherical roller type with a taper fit, having a life expectancy of ten years, if properly installed and maintained.

The selection of bearings for machines in the paper industry usually is handled by the machine builders. Therefore, any discussion of load factors, metallurgy, etc., can best be handled by the machine builders and bearing manufacturers.

A very pertinent point on the maintenance of dryer bearings has to do with the accessibility of the bearings for inspection and replacement. The higher speeds and consequent higher production rates place the papermaker under pressure to keep his machines operating the maximum number of production hours with the minimum time down for repairs.

Machinery builders in recent years have been designing and building machines with ready accessibility and visibility of dryer bearings. Extending a dryer journal through the gear case so that the back side bearing is on the outside of the case is of inestimable value to the operator. It saves time when it is necessary to inspect or change a bearing. It also makes possible the installation of windows of glass or Lucite in the bearing housings. These windows make it possible for an oiler to inspect all dryer journal bearings while a machine is in operation.

A particular machine on which serious bearing failures have been experienced was designed to use two separate oiling systems for the dryer sections. One system is for the anti-friction bearings; the other, for the gears transmitting the driving power to the dryers.

There are a number of advantages in having two such lubricating systems for the dryers. Among these advantages are:

1. Considerable saving in cost of lubricants can be made by using premium grade of oil in the bearing lubricating system and a less expensive oil in the gear train system.

2. Ability to keep the oil for the bearings clean and relatively free of moisture. (This second advantage probably is of greater importance than the first.)

The structure of the housings of the intermediate dryer gear bearings on the machine under consideration allows oil to transfer from the bearing system into the gear train system. This condition has made it impossible for the benefits of the two separate systems to be realized. The transfer of oil occurs when using the lowest safe oil feed rate to the intermediate bearings, at the rate of approximately one barrel per day. This difficulty has made it necessary to use one lubricant to do both jobs; the excess oil in the gear lubricating system being passed through a centrifuge before returning to the bearing system.

The development of continuous forced-feed lubrication systems does not appear to have kept pace with the development of the modern paper machine. Certain changes in the lubricants now being used for anti friction dryer bearings make it necessary to maintain much larger oil reservoirs than usually are furnished by the manufacturers of this equipment. It has been found necessary to allow longer periods of time for settling of the impurities picked up by a lubricant.

The old system of washing a lubricant appears to be of no advantage with the oils now recommended by the lubricating engineers. There is room for improvement in the filters used for removing foreign matter from the oil. It is believed that the conical type of filter will do a better job than the bag type filter now being used.

Permanent magnets should be installed in the system to remove any metallic iron. There should be an installation in the return line from the bearings to the oil system; also, in the discharge line of the pump supplying oil to the bearings.

Frequent inspection of these magnets make it possible to detect bearing failure that has progressed to the point of flaking metal from the bearing race. Unfortunately, the discovery of metal at these magnet points does not indicate which particular bearing is failing. However, it does let the observer know that he has trouble. Then a shutdown can be planned to remedy it.

This magnetic removal of iron from the oil system prevents the return of the metal flakes to do damage to those bearings which otherwise have not been harmed.

For a number of years, major oil companies have been working on the development of suitable lubricants for the job under discussion. Progress has been made in their research; and as development programs go forward, no doubt still further progress will result.

Paper machines, to a degree, like individuals, seem to have their individual peculiarities and idiosyncrasies. Therefore, the lubrication engineer must take this characteristic into consideration in making a thorough study of any machine for the purpose of recommending the lubricant which, in his opinion, is the proper one to use.

The recommendation may vary with the section of the country in which a machine under study is located. Climatic conditions may make such a recommendation necessary. For example, if a machine is operated in a climate that is very humid it is necessary to include both an inhibitor and a detergent in the lubricant.

This matter of bearing maintenance is not a new one; but it continues to present new problems. The solution of these problems lies in the cooperation of the operators, the machine builders, the bearing manufacturers and the lubrication engineers. It also is necessary to couple this cooperation with the unceasing vigilance of the oilers on the paper machines.

Presented before the Annual Meeting of the American Pulp & Paper Mill Superintendents Assn., Chicago, Ill., June 8-10, 1950.

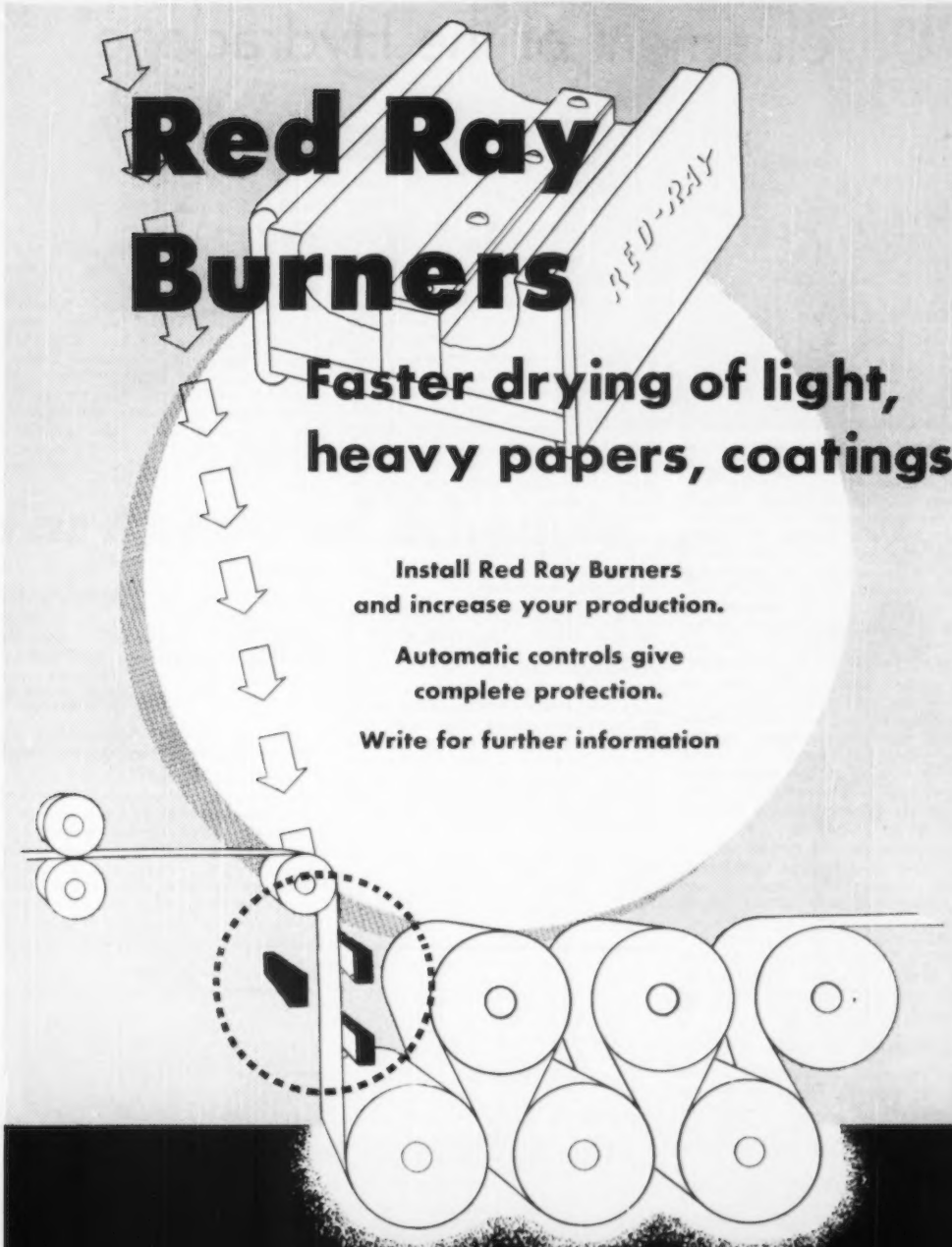
# Red Ray Burners

## Faster drying of light, heavy papers, coatings

**Install Red Ray Burners and increase your production.**

**Automatic controls give complete protection.**

**Write for further information**




**RED-RAY MANUFACTURING CO. Inc.**

455 West 45th Street New York 19, N. Y.

*Manufacturers of Radiant Combustion Equipment*

# Development of the Hydraclone*

W. A. WHITE, JR.[1]

## Introduction

The Pulp and Paper Industry has long employed the well-known principles and numerous machines which are available to produce the mechanical separations of raw materials used in this industry. Methods involved depend upon such properties as particle size, particle inertia, and specific gravity differences. All of these methods depend on the use of some kind of resistance to bring about separation.

The oldest and best known method for accomplishing separation of solids from liquids is settling. The liquid in this case affords resistance through which the solids must fall. Since the falling speed of a particle in a fluid depends upon both size and specific gravity, it is possible to separate a homogeneous material by particle size, or a mixture of sized material by specific gravity. Some methods permit either quiescent or flowing type settling, others accelerate it centrifugally.

The present trend in the paper industry is toward the use of more reclaimed papers and less virgin pulps wherever possible. Standards for the finished sheet of paper are being raised continually to the point where dirt, grit and other foreign materials must be virtually eliminated for the product to be acceptable.

Existence of this condition during the period which immediately followed the war prompted the research and development engineers of the Black-Clawson organization to accelerate their efforts on the development of a centrifugal velocity-type separator which would eliminate objectionable foreign material from paper stock, regardless of the furnish used.

## Testing Program

The apparent delay which has preceded introduction of this specific development has been due to years of careful study, basic design work, and the all important laboratory and field testing.

Bearing in mind that the field testing is always the most important phase of any development, we were determined that equipment of this nature was to have a thorough laboratory and field testing program, so that the faults which are nearly always inherent in new designs could be, for the most part, eliminated before the machine was offered to the trade.

## Background

With experience gained over a period of fifty years of designing and applying waste paper cleaning systems and helping to pioneer the use of centrifugal pumps in the paper industry, we felt that our understanding of the problems involved, provided a suitable background against which to design. Actually, the design of this type of unit is the design of a centrifugal pump in reverse. Pump converts velocity to pressure — Hydraclone converts pressure back to velocity. Velocity becomes centrifugal force which is the useful component.

## Principles Involved

The Hydraclone separator is a centrifugal velocity type unit which is distinctly different in design, utilizing centrifugal force as the separating force causing foreign material, having a specific gravity greater than water, to be thrown out of suspension. The principles employed in this unit follow natural laws which have been proven over a long period of years. It is, however, the manner in which these principles are applied that determines the efficiency of the unit.

Before going into the details of the Hydraclone design, we believe that a review of the basic principles of settling and centrifugal separation is in order.

## Settling Principles

### Stokes' Formula

Reference to Stokes' law which deals with the movement of small particles in streamline flow gives us a better understanding of the actual behavior of the grit particles as they flow through a settling trough, or any other type of mechanical separating device. The resistance to flow of these small particles varies as the specific gravity of the liquid, rather than the viscosity, and is proportional to the quantities concerned. *Figure 1* shows the equation which is known as Stokes' formula.

STOKES' FORMULA

$$W = 6 \pi \eta r$$

*Where —*

W = RESISTANCE TO HYDRAULIC SHEAR OR FLUID MOVEMENT

$\eta$ = VISCOSITY COEFFICIENT

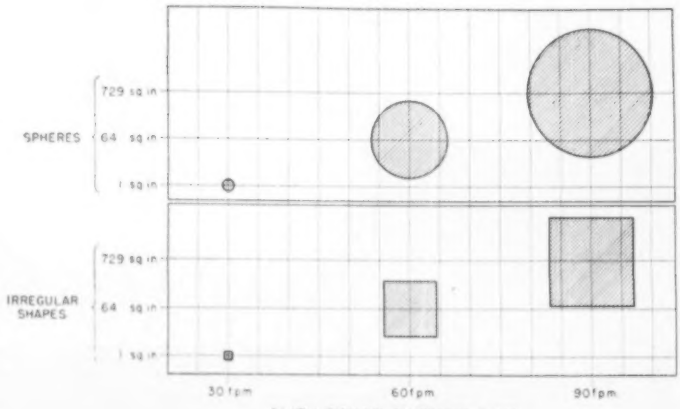
r = RADIUS OF SPHERICAL PARTICLE

PAGE 243 - COLLOIDAL PHENOMENA
BY ERNST HAUSER

Figure 1

Resistance of the particles can be determined by substituting in the formula shown in *Figure 1*. If settling is assumed to follow Stokes' law, the apparent viscosity is a variable and a function of the consistency. Moreover, when the particles are in a dense concentration a certain amount of disturbance is set up in the fluid, which,

Figure 2




SIXTH POWER CARRYING LAW

PAGE 365 - MICROMERITICS
BY DALLAVALLE

* Presented at the Annual Convention of the American Pulp & Paper Mill Superintendents Assn. in Chicago, Ill., June 7-10, 1950.

[1] Assistant Chief Engineer, Shartle Brothers Machine Co., Middletown, Ohio.

[2] and [3] Hydraclone and Classifiner are registered trade names.

For 1942 vision of things to come in stock cleaning see Feb. '42 Messenger.

For today's reality in stock cleaning study principle, construction and performance of sensational new Hydraclone.

# Far Ahead of Schedule...

*In the early forties we predicted in one of the Messengers something very revolutionary in stock cleaning by 1962. It's now only 1950 so we are exactly 12 years ahead of schedule as we "break" the new Shartle Hydraclone velocity-type Separator.*

**AN OUTSTANDING ACCOMPLISHMENT IN FAST, THOROUGH, LOW COST STOCK CLEANING.**

1. Minimum water loss—less than 100 gallons per day—a surprisingly *low* loss.

2. Minimum mass to be removed—rejects only 40% wet when ejected.

3. No loose fiber loss — only staple bound bits of paper ejected — not enough to rate mention.
Check this against other known methods.

4. Efficient removal of all types of trash having a specific gravity greater than water.

5. Low power consumption — efficient hydraulic design of entire mechanism results in minimum power requirement.

6. No shut downs necessary — Unit could run every day in the year without shutting down because rejects are extruded at same rate they accumulate. Unit, therefore, operates at maximum efficiency at all times.

7. Low space requirement — large 1,000 G.P.M. size only requires a 3'x6' floor area and only 11' headroom.

8. No supporting structure required—Unit shipped completely assembled ready to run. Can be placed in operation in matter of hours.

9. Built in several sizes—a capacity for every mill requirement.

Superintendents "in the know" — men qualified to judge—swear that in our Hydraclone velocity-type Separator we've hit it "right on the nose." Get the facts and see if you don't agree.

Fully assembled. Install in few hours.

## SHARTLE BROS. MACHINE CO., MIDDLETOWN, OHIO

Divisions of THE BLACK-CLAWSON COMPANY, Hamilton, Ohio
Western Sales Office: Mayer Bldg., Portland, Oregon
Associate: ALEXANDER FLECK LIMITED, Ottawa, Canada
Subsidiary: B-C INTERNATIONAL, LTD., 16 Catherine Place, Victoria, London S.W.1, England

# HYDRACLONE

***Fully described in this issue***

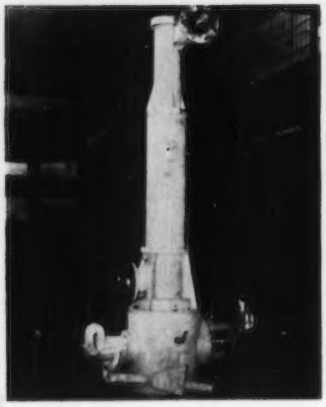


Figure 3

in some cases, may be sufficient to destroy streamline flow. As a particle settles toward the bottom of the container the particle concentration increases in the lower strata. The paper stock, floating trash, and undefibered particles which are in suspension with the grit have the effect of increasing the apparent viscosity of the water which is the carrying media, and consequently makes settling more difficult. If follows, therefore, that the lower the consistency of the suspension, the better the settling effect.

### Sixth Power Carrying Law

Settling is also greatly affected by the velocity of the fluid in a riffler, settling trough, or any other type of mechanical separator. This principle can be explained by referring to the "Sixth Power Carrying Law" which applies to the movement of particles in suspension. This law states that the power of water for transporting or pulling solids along with it varies as the sixth power of its velocity, i.e., if the water velocity is doubled, carrying power will then be multiplied 64 times, or if tripled, 729 times, and so on for higher speeds. *Figure 2* illustrates, graphically, the effect of velocity on a given particle size. It will be noted that a particle having a cross sectional area of one square inch at 30 f.p.m. velocity can be represented as having an area of 64 square inches at 60 f.p.m. velocity, and an area of 729 square inches at a velocity of 90 f.p.m. This phenomena should illustrate exactly why a settling trough designed to operate at a capacity of 60 tons per day, "which is equivalent to 1000 gallons per minute at 1 percent consistency," would be very inefficient if operated at 100 tons per day, or "1750 gallons per minute at 1 percent consistency." If the settling trough were designed for a velocity of 30 f.p.m., it would then be necessary to operate the settling trough at a velocity of 50 f.p.m. due to the increased tonnage demand.

## Physical Design Features

The Hydraclone has many physical design advantages which should appeal to the mill operators, as well as the mill maintenance men. *Figure 3* shows an external view of the Hydraclone taken on the erecting floor of our shop. It will be noted that this unit consists of a single assembly, and consequently, no field erection work is required for installation. The unit is shipped as shown; in an assembled condition.

No super structure is required to install the Hydraclone as it is provided with its own base for mounting directly on the operating floor, or elevated foundation.

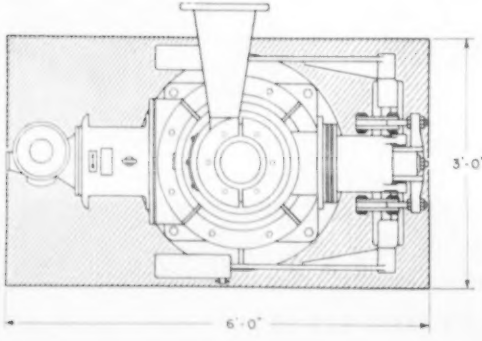
*Figure 4* shows a plan view of the Hydraclone. Note that the unit can be installed in a space 3 feet wide by 6 feet long. Floor space requirements include the reject mechanism, but does not take into consideration the space required for a reject disposal cart. Disposal of the rejects after they are ejected from the machine will vary with each mill installation. Some mills prefer to use a shovel bed to hold down head room requirements, while others will use carts located directly under the ejection screw, or dispose of the rejects through an opening in the operating floor.

The Hydraclone requires a comparatively small amount of head room, slightly less than 11 feet from the base to the top of the unit. Thus, the unit can be installed in most any mill without the expense of cutting through floors, or raising roofs.

## Internal Design and Function

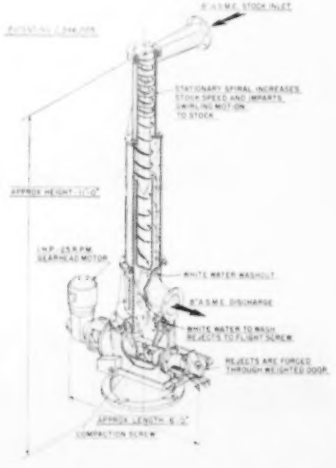
The Hydraclone employs a straight through flow pattern from the inlet to the outlet of the unit and consequently it avoids the ever-dangerous reversal of flow characteristics. Referring to *Figure 5* note that the incoming stock enters the unit tangentially at the top under sufficient pressure to produce the desired velocity which results in centrifugal force. Incoming stock passes through the tangentially located rectangular opening into a stationary helix, which guides the stock in a controlled spiral where it is gradually accelerated by the increasing diameter of the central helix core. The increasing cross section of the helix core has been very carefully determined and accomplishes the delicate transition from pressure to velocity without the costly hydraulic losses which result from turbulence, and in effect provides a longer reducing nozzle. The resulting laminar flow permits foreign particles, having a specific gravity greater than water, to be easily induced to the wall of the inlet casing by the centrifugal force which has been set up within the unit. The laminar flow obtained by the guided helix minimizes the interference factors which are inherently present in paper stock suspensions, allowing more efficient use of the centrifugal force available. The central core of the inlet helix deliberately forces all the stock off-center and, hence, the particles in the suspension are under the influence of centrifugal force *at all times*. The unit has no dead-center core having a zero centrifugal force value, as the solid central core of the guided helix eliminates this possibility.

The stationary helix does not extend to the bottom of the inlet section as the flow pattern is well established after several turns of the spiral and




← Figure 4

Figure 5 →


STATIONARY SPIRAL INCREASES STOCK SPEED AND IMPARTS SWIRLING MOTION TO STOCK
APPROX HEIGHT 11'0"
WHITE WATER WASHOUT
WHITE WATER TO WASH REJECTS TO FLIGHT SCREW
REJECTS ARE FORCED THROUGH WEIGHTED DOOR
APPROX LENGTH 6'-2"
COMPACTION SCREW

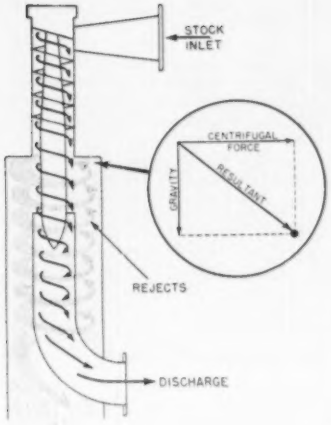
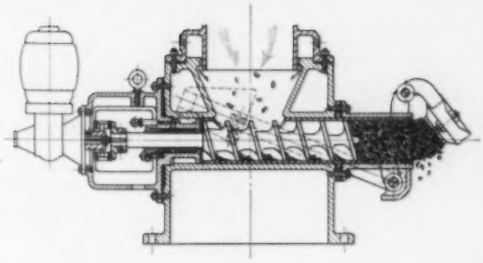



Figure 6 →



← Figure 7

continuing the spiral to the point where the inlet casing joins the outer casing caused the fluid to be discharged to the outer casing with a jet-like action resulting in undesirable turbulence and reentrainment of already separated grit with the cleaned stock. As the stock spirals downward to the point where the inlet casing joins the outer casing of the unit, the centrifugally influenced controlled-flow of the suspension has set up a very definite pattern with the grit concentrated against the wall of the inlet casing, while the clean stock is held in strata adjacent to the central core.

The controlled spiral flow of the suspension then enters a zone just below the point where the inlet casing is attached to the outer casing of the unit. The foreign material which has been held in strata against the wall of the inlet casing is thrown out radially by centrifugal force against the wall of the annular outer casing. The resulting path of the grit particles is illustrated by the vector diagram shown on *Figure 6*.

The outer casing is completely filled with liquid and consequently no radial movement of the entering liquid occurs, and the spiral rotation of the cleansed stock continues during its passage across the annular orifice provided. An interface is thus formed between the entering stock and the liquid already in the outer casing. This induces the liquid in the outer casing to rotate in a secondary spiral flow with the rotating cleansed stock. Hence, turbulence at the interface is held to a minimum and the particles of high specific gravity can readily be thrown, by the centrifugal force, from the entering stream of stock into the outer strata of liquid. The centrifugal force induced in this chamber is sufficient to then hold those particles against the outer wall, while gravity progressively induces them downward. As the particles progress downward, their rotating velocity decreases until they come to rest in the ejection chamber.

Meanwhile the cleansed stock, still swirling, has entered the open upper end of the discharge tube which leaves the unit by means of an elbow at the lower end. Once the grit and other foreign material has been centrifuged from the stream of clean stock, a solid wall is interposed by means of the discharge tube and, hence, there can be no mixing of clean stock and grit laden fluid.

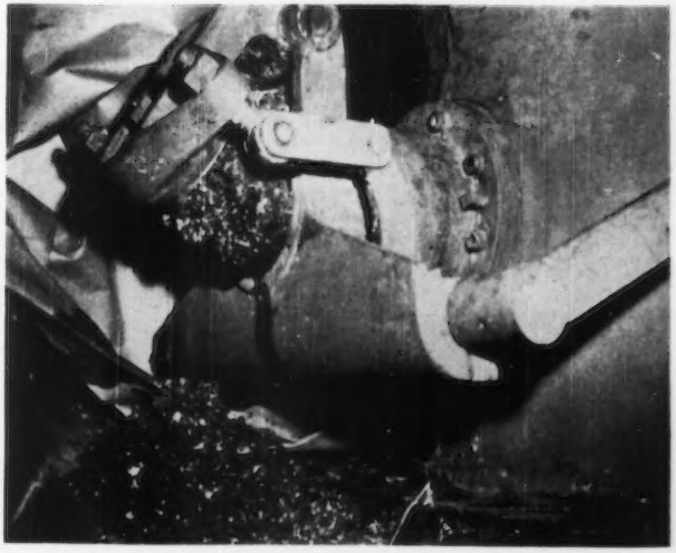
## Reject Elimination

*Figure 7* shows a section through the compaction screw which continuously eliminates the rejects from the unit. As the rejects accumulate in the screw, they are compressed and forced outwardly until sufficient rejected material has been accumulated at the outlet point to force open the counterweighted closure. When this occurs the rejected material is discharged in a semi-moist condition "40 percent wet," against the counterweighted closure which maintains a controlled pressure against the rejected material at all times. The action of the counterweighted closure against the accumulated slug of rejected material which always remains between the end of the compaction screw and the closure maintains a very effective seal against the loss of liquid or reject plug. The weight of the closure causes the rejected material to crumble and break-off continuously as it is ejected. The reject screw will extrude the rejects from the unit at the same rate they are received and has sufficient potential capacity to accommodate any surge of rejects to which the unit may be subjected. *Figure 8* shows an actual photograph of the Hydraclone reject mechanism.

## Elutriation Water

Separation efficiency is greatly aided by the inward flow of a stream of elutriation water which is maintained at a low volumetric rate, slightly in excess of the volumetric displacement of the rejected material. This water is introduced through a control valve at a point just above the reject screw as shown in *Figure 5*, and should be in the order to two gallons per minute. This elutriation water also provides a back pressure across the discharge tube which induces the clean stock to

Figure 8



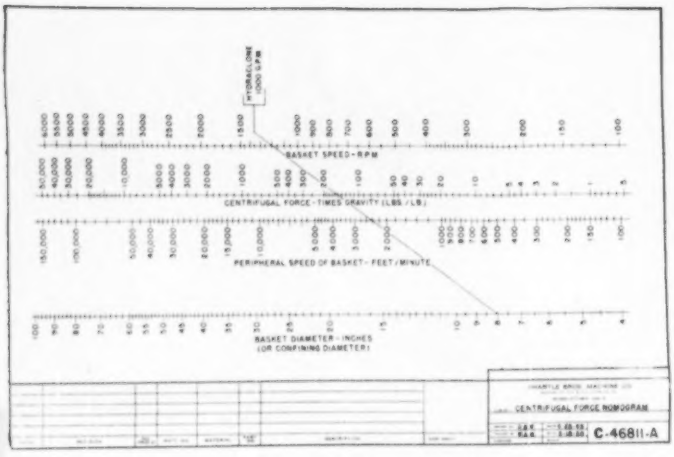



Figure 9

maintain its desired course by forming a liquid lock at this point. The incoming water also back-washes any paper stock particles which have been carried down to the reject chamber by becoming attached to heavier particles of rejected material. The pressure on the incoming water need only be sufficient to overcome the internal pressure within the unit.

An inspection window is provided just above the reject screw so that the effect of the elutriation water can be observed and regulated by the control valve. It also serves for the inspection of internal parts on shut-down periods.

## Operation and Application

### Capacity Range

The Hydraclone has been designed in three sizes having capacities of 250, 500, and 1000 gallons per minute.

We recommend operating the 1000 gallon unit at a consistency of 1 percent, or less, for efficient cleaning action. When the unit is operated at approximately .8 percent consistency, it has an approximate capacity of 50 tons per day. The recommended inlet pressure at the Hydraclone is 18 pounds with a pressure drop through the unit of approximately 15 pounds. The actual operating inlet pressure will vary depending upon the physical layout and the discharge piping conditions.

The discharge from the Hydraclone should be carried to an elevation equal to that of the inlet to insure smooth operation of the unit and eliminate any possibility of surging, or air entrainment.

### Power Requirements

Power requirements are measured in terms of the horsepower required by the pump to furnish the necessary inlet pressure, and consequently the efficiency of the pump must be taken into consideration.

The 1000 gallon unit, under actual test, processing 50 tons at .8 percent consistency, consumed 15 h.p. To this must be added the power required to overcome pipe line friction loss and static discharge head, both of which will vary in accordance with the physical layout.

The reject screw of the Hydraclone is operated by a 1 h.p., 25 r.p.m., gearhead motor which would bring the actual total horsepower requirements on the unit up to 16 h.p.

It must be remembered when evaluating operating pressure and the resulting horsepower requirements of a velocity type centrifugal separator, that the efficiency of the cleaning job is not gauged by the lowest horsepower, inlet pressure and pressure drop, but rather by the centrifugal force developed.

The means of effecting separation, the maintenance of laminar flow and the lack of turbulence within the unit are also important considerations to be evaluated when gauging the efficiency of this type unit.

*Figure 9* shows a centrifugal force diagram on which is plotted the operating conditions of the Hydraclone. The inlet casing has an 8-inch inside diameter which at 1000 g.p.m. results in a theoretical centrifugal force of 150 times gravity. It is the centrifugal force exerted that determines the size of grit particle which can be removed from suspenison.

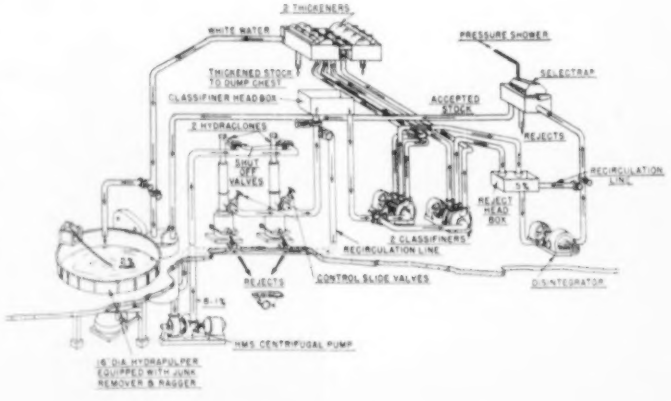
## Recommended Layouts

The 1000 gallon Hydraclone has been designed for location in the stock preparation system directly following a pulper or breaker beater. Its specific function is to remove grit and other foreign materials having a specific gravity heavier than water. The 500 gallon and the 250 gallon units are designed for operation in the machine room at a point where stock has been diluted to screening or forming consistency.

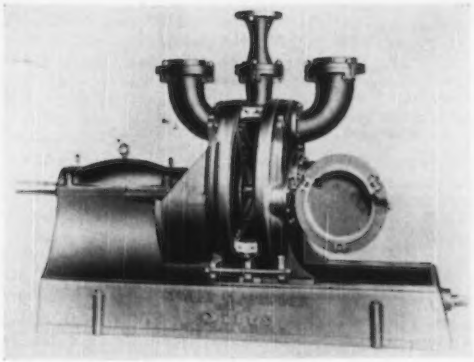
Light rejects such as match sticks, rubber bands, cellophane, and the like, having a specific gravity less than water have to be screened out by supplementary equipment. The degree of defibering obtained in a pulping unit used ahead of the Hydraclone will have a very decided effect on the efficiency of the unit. Large particles of paper and fiber bundles, characteristic of breaker beater stock carry fine entrained dirt into the system and consequently reduce the efficiency of the grit removal.

*Figure 10* shows a recommended layout for a 100 ton mixed paper system employing a Hydraclone directly after

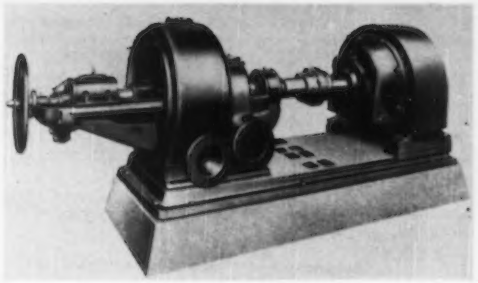
Figure 10




100 TON WASTE PAPER CLEANING SYSTEM



← Figure 11



↑ Figure 12

the Hydrapulper[2]. The stock extracted from the Hydrapulper[2] is diluted to .8 percent consistency in the pulper regulating box by means of the return white water from the thickeners. It is then discharged to the Hydraclone by the pulper dump pump which delivers the required pressure and gallonage.

The discharge from the Hydraclone is directed to a headbox, thus allowing the unit to operate against a fixed discharge head at all times. The discharge piping from the unit should be arranged with the necessary control valves and a recirculation line which discharges back to the suction of the Hydraclone pump. In this manner the through put can be held constant with a variable system demand.

The grit free stock is discharged from the headbox by gravity to two 36-inch Classifiners[3] equipped with ⅛-inch perforations. *Figure 11.*

Here the floating rejects are screened out and discharged to a headbox where they are diluted to a consistency of .5 percent. These rejects then flow by gravity to the suction of a Disintegrator *(Figure 12)*, or Drubber *(Figure 13)*.

These units are designed to defiber the large particles of paper stock and fiber bundles which have been rejected by the Classifiner[3]. Complete defibering of the unpulped paper stock is obtained in this stage of the reject treatment.

The floating rejects and the defibered stock are then discharged from the disintegrating unit to a Selectrap *(Figure 14)*, which acts as a tailing screen for reclaiming the rejected fiber.

As indicated in *Figure 10*, the accepted stock from the Selectrap at .5 percent consistency flows by gravity back to the Hydrapulper[2] regulating box and thus is returned to the system as *reclaimed* fiber.

The accepted stock from the Classifiner[3], free from grit, floating trash, and sufficiently defibered to pass through the ⅛-inch perforated screen plates, is discharged directly to the thickeners where it is thickened to jordaning consistency and dropped to a storage chest.

## Adaptability to Existing Systems

Practically all of the settling and selective screening systems which have been installed for ten years or more, are operating at consistencies and capacities far in excess of those for which they were originally designed. The Hydraclone can be inserted into such an existing system without disturbing any of the major items of equipment.

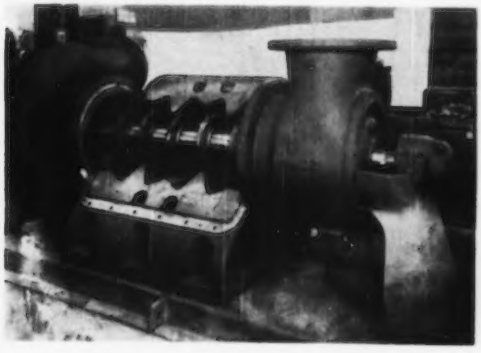
It would be necessary, however, to supply a pump capable of delivering the required capacities and head from the Hydrapulper[2] or Breaker Beater to the Hydraclone.

The settling trough can be left in place to serve as a flume for transporting the stock from the Hydraclone to the Thickeners, or the trough can be completely eliminated. *Figure 15* shows a schematic drawing of the Hydraclone as applied to an existing settling system, with the settling trough in place. *Figure 16* shows the same system with the settling trough eliminated.

Since the Hydraclone is designed to handle only the rejects having a specific gravity greater than water, we recommend that all waste paper cleaning systems be equipped with the necessary screens and reject handling equipment to eliminate the harmful floating trash, as well as the grit from the system.

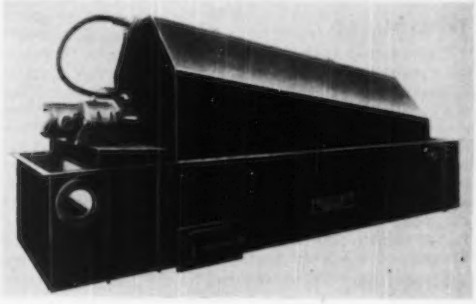
## Efficiency Evaluation of Cleaning System

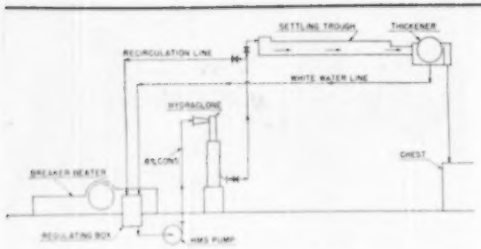
We carry on a very extensive field testing program for the new equipment being developed and also for the equipment which is furnished to the mills either as a single unit, or as a complete system. The completion of such testing always brings rise to the question — of unit and system efficiency. It is an extremely difficult task to obtain reliable efficiency figures due to the numerous variables which are always present.



← Figure 13

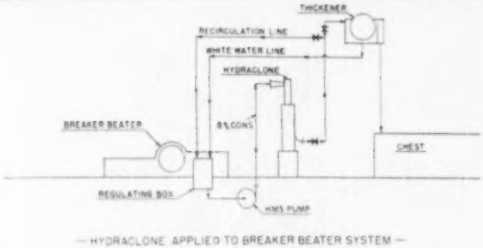
↓ Figure 14






— HYDRACLONE APPLIED TO BREAKER BEATER SYSTEM —
— SETTLING TROUGH IN PLACE —

← Figure 15




— HYDRACLONE APPLIED TO BREAKER BEATER SYSTEM —

↑ Figure 16

## Raw Material Variation

Unlike the mill making their product from virgin pulp where pulping characteristics and other factors are held within reasonable tolerances, the waste paper systems have an ever-changing furnish and dirt content which cannot be controlled by the user.

Mill operating conditions will also greatly effect the reliability of the test data and the resulting efficiency figures. Intermittent operation of pulping systems which are designed for continuous operation results in frequent acceleration and deceleration periods during which the reduced through put has a direct effect on the efficiency of a centrifugal velocity type separator.

Lack of sufficient thickening and white water handling capacity is encountered in some installations which results in the system being run at consistencies above the recommended 1 percent. Operation of the unit at consistencies above 1 percent, lack of consistency control, and system balance are factors which will effect the efficiency cleaning job obtained.

Very few board mills make any attempt at cleaning up their liner stock which is, in many cases, made up from sorted or selected mill wastes which can contain very large quantities of fine grit and dirt. The machine liner white water systems frequently overflow into the filler white water system, carrying more fine grit into the filler system. All of these factors plus the possibility of suspended solids in the fresh water system have a harmful effect on the final sheet and make it much more difficult to evaluate and determine the efficiency of a mixed-paper cleaning system.

## Testing Methods

The testing methods which have been employed to date for the purpose of grit analysis and evaluation in paper stock have long been a subject of controversy. Spot samples on any system are practically worthless and we have consequently made it our practice to sample a system over a 24 hour period at 15 minute intervals, compiling a composite sample which is thoroughly mixed together before drawing off a sample for testing.

The methods generally used for analyzing the quantities and grit particle size contained in a given sample of paper stock, are decanting and the ash test method. Our laboratory testing indicates to us that the decantation is less reliable than the ash test method due to the fact that sufficient turbulence is encountered in this procedure to carry away a small quantity of the fine suspended solids with the decanted water.

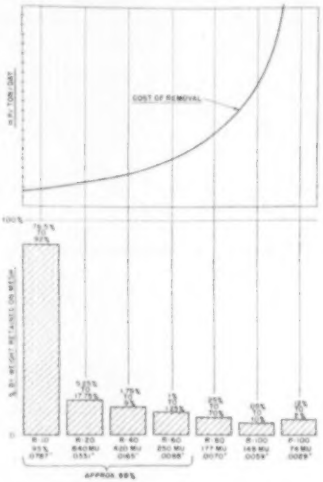



Figure 17

We, therefore, use more frequently the ash test method which consists of selecting a given sample of stock and dewatering it in a finely woven cloth bag to prevent losing any of the fine grit particles. The sample is then heated until bone dry, weighed and then inserted into a gas fired furnace at a sufficiently high temperature to insure complete burning of all fibrous material. The ashes are then removed from the furnace and given repeated washings through a 200 mesh screen, after which the remaining grit is dried, weighed, and passed through the various mesh screens for classification. After classification the amounts retained on each size screen are weighed and the percentage calculated.

The ash test gives a very accurate figure on the non-combustible solids which are eliminated from a paper stock slurry; however, combustible solids having a specific gravity heavier than water are destroyed by this method of testing and consequently the apparent efficiency of the unit suffers as a result.

## Actual Mill Requirements

The removal of extremely fine grit from paper stock presents a very serious and costly problem which must be solved through the cooperative efforts of the paper mills and the machinery manufacturers. Due to the interference factors present in paper stock slurrys, and the economic considerations involved, it is virtually impossible to remove every last bit of fine grit and foreign material from paper stock. *Figure 17* shows a graph on which we have indicated the various mesh sizes and the relative cost in horsepower for removing the grit particle sizes noted thereon. You will note that 99 percent of the grit and foreign material found in paper stock slurry can be removed for a cost which the mill can justify economically. The remaining 1 percent, however, is extremely difficult to remove and you will note that the cost of removal goes up rather sharply on grit having a particle size smaller than 60 mesh.

Through a cooperative effort between the mills and the machinery manufacturers the objectionable grit particle size can be established for various grades of paper so that equipment can be applied to produce the desired degree of cleaning which will result in an acceptable sheet of paper.

## Economic Benefits of the Hydraclone

It is economically beneficial for any mill using a mixed paper furnish to install a Hydraclone directly after their Breaker Beater or Hydrapulper[2], in order to clean up their furnish as far back in the system as possible. Thus, preventing harmful grit and abrasive material from passing into the system and the subsequent equipment.

The Hydraclone will allow the mixed paper mills to use a cheaper furnish and still obtain a cleaner finished product. Time and labor required for costly clean-up periods will be meas-

urably decreased due to the continuous removal of grit from the rejection screw of the Hydraclone.

Less maintenance will result on such items as jordans, refiners, pumps, screens, cylinder molds, and Fourdrinier wires due to the elimination of foreign material.

Considerable savings will also be noted on such items as felts, dryers, doctors, calender rolls, slitters, cutters, and corrugating rolls.

The elimination of grit and floating trash will also permit the sheet to contact the dryers more uniformly, thus resulting in a lower steam cost for drying, or an increased production rate depending on the characteristic paper machine limitations.

## Conclusion

### Advantages of the Hydraclone

In conclusion we would like to re-emphasize some of the pertinent advantages of the Hydraclone:

1. The unit is designed to operate on a straight "flow-through" principle with no reverse flow condition to set up harmful turbulence. Hence, there is no re-entrainment of rejects.

2. The Hydraclone has liberal open areas around all parts and consequently rejects, or stock, do not accumulate and change the flow characteristics of the unit. The velocity in the Hydraclone has been carefully established by theory, confirmed by field testing, and remains the same during continuous operation of the unit.

3. The accepted stock from the Hydraclone is decelerated after it enters the discharge tube instead of speeding up at the exit which causes re-entrainment of grit particles.

4. The Hydraclone design prevents short-circuiting from high pressure inlet to low pressure outlet.

5. The paper stock suspension is at all times under the influence of centrifugal force as a result of the solid center core. There is no neutral core of zero centrifugal force present, and consequently the rejected material can not be re-entrained.

6. The rejects are extruded in a semi-moist condition and no addition settling chamber, which must be continuously decanted, is required. Decanting has been proved to be unreliable even as a laboratory method of grit sample analysis, and therefore, the decanted water must be sent to the sewer or the fine particles of grit in this water will find their way back into the white water system. The water loss on the Hydraclone is in the order of one-half pint per minute, or 90 gallons per day.

7. The disposal of rejected material is continuous and the pressure within the Hydraclone is sealed against the atmosphere at all times. As a result of this condition, there is no sudden pressure change, or variation caused by intermittent cleaning, or the opening and closing of a continuous operated port type valve.

8. The fiber losses resulting from the screw type rejection mechanism are very low. Actual tests on mixed paper furnish show an average figure of about 1 lb. per ton fiber loss. Of this 1 lb., 78 percent is represented by clinched staples to which fibers adhere, thus giving the fiber a false specific gravity and causing it to be rejected.

## Literature Cited

*Micromeritics* — The Technology of Fine particles by J. M. Dallavalle.

*Colloidal Phenomena*—An Introduction to the Science of Colloids by Ernst A. Hauser, Ph.D.

# What We Have Learned About Diesel Engines*

S. E. TOMCZAK,[1]

The Flambeau Paper Div. of The Kansas City Star Co. is located on the Flambeau River at Park Falls, Wis. The plant consists of a 100-ton bleached sulphite mill, a 50-ton groundwood pulp mill and two paper machines. Our generated power is principally hydro-electric. Beginning with two reservoir dams upstream, which when full, form a flowage of 22,000 acres, we have a dam at the mill and three hydro-electric plants located within fifteen miles downstream. Supplementing the hydro-electric plants, we have a steam turbine generator and two diesel driven generators.

The diesels are Fairbanks Morse Model 38 D 8⅛, ten cylinder opposed piston type. This model of engine is used on many locomotives and for marine service. Our diesels are direct-connected to generators. They are operated at 720 r.p.m.; and, at that speed, they are rated at 1600 h.p. At 800 r.p.m., the rating is 1800 h.p. The principal auxiliaries are: air blower, circulating pumps for cooling, and heat exchangers. The air blower has a capacity of 6800 c.f.m.; and at 3 p.s.i. delivery, it requires 162 horsepower.

The jacket cooling water is circulated through a heat exchanger. Engine temperatures are maintained by a thermostatic control that by-passes jacket water around the heat exchanger.

The pump for cooling water for the heat exchanger has a capacity of 650 g.p.m. The amount actually used varies with the season.

The cooling water is piped from the filtered water supply main right after the filter plant. This water is under 70 p.s.i. as it enters the suction side of the circulating pump. The pump boosts the pressure up to 92 p.s.i. This boost in pressure enables us to return the water, which has picked up some heat in its passage through the heat exchanger, back into our mill supply water system. There is no wasted water and the heat recovered results in a direct saving of fuel required for heating our process water.

The lubricating oil circulates at the rate of 300 g.p.m. is cooled by a similar heat exchanger and cooling water supply.

### Why We Installed Diesels

The average precipitation in our part of the state is 36 in. In 1947, the precipitation was only 26.64 in. Our reservoir was only partly filled in the spring. As a result, we had to curtail the generation of hydro-electric power. To add to our difficulties, we had to produce more groundwood on account of the critical shortage of newsprint. Our steam plant also was overloaded on account of increased sulphite production.

We have a connection with the Lake Superior District Power Company, but it did not help. The power shortage in our part of the State was universal. Our only alternative was to install quickly a diesel-driven generator. This diesel, which took care of our needs nicely for about a year, was started

* Paper presented before the 31st Annual Convention of the American Pulp and Paper Mill Superintendents Assn., Inc., on June 8-9-10, 1950, at the Edgewater Beach Hotel, Chicago, Ill.

[1] Plant Engineer, Flambeau Paper Div., Kansas City Star Co., Park Falls, Wis.

up about mid-summer and has run continuously since then.

About the middle of 1948, we were able to purchase a new boiler that we needed badly to replace four old boilers. Our water storage reservoir was lower than ordinary at that time of the year. However, we did not anticipate another year of abnormal low precipitation. Even if we had, we had to install a new boiler anyway.

The removal of the four old boilers the installation of the new one was a sizable job. We estimated that the change-over would require about four months.

After we started dismantling the old boilers, it happened—the worst thing that could happen to us—it did not rain any more, not even a little frog duster. It was not long before our storage reservoir was nearly empty. We realized that if we did not get 10 in. of rainfall before the freeze-up, the shortage of power would be disastrous and would force us to curtail operations. Not willing to gamble on getting that amount of rainfall in the next sixty days, we decided to install another diesel and generator.

This second unit was purchased, installed and in operation just in time to prevent a slowing down in the production of paper. Precipitation that year was only 20.8 in. That was only 57.7 percent of normal — the worst that we have any record of.

The two diesels and the new boiler were our security for that year and also for the early part of 1949. Precipitation in 1949 was practically nil until June; but, in June and July, we had 19.22 in. The remaining months of the year had more than the average rainfall.

## Operating Data and Costs

Our No. 2 diesel is located a considerable distance from our central control. Therefore, it is necessary to have an operator on each shift. The following data and cost figures over the No. 2 installation for the year of 1949:

Gallons fuel oil used .....257,357

Average cost per gallon..13.16 cents
K.W.H. produced .....3,439,349
K.W.H. per gallon fuel oil .....13.3
Cost per K.W.H. .....1.37 cents

The cost figures for the No. 2 diesel cover all predetermined and controllable expense. They also include some extraordinary replacements, as that unit, as well as No. 1, was in Navy service for about 2 years.

Our No. 1 diesel is located near our center control room. It does not require extra operators. Predetermined and controllable costs for it are identically the same as on No. 2. The elimination of an operator on each shift, however, brings its cost down to .01232.

We think that these costs are in the range of good performance, as evidenced by figures compiled by the Public Service Commission of Wisconsin in a survey of 26 diesel-driven power plants. The Public Service Commission of Wisconsin figures follow:

Average of the
3 lowest plants .....1.266 cents
Average of the
26 plants .....1.44 cents

## Maintenance Work on Diesels

The life of the cylinder liners, excluding accidental cracks, is approximately 15,000 hours. Accidental cracking of cylinders is due principally to failure of cooling water supply.

Our diesels are shut-down periodically for inspection and servicing. If a machine has new rings, we shut it down about every six weeks to clean the ports and upper header (air intake). The carbon deposit that collects at these parts is due to some oil getting by the rings, and also oil from the blower. To remove the deposit requires two hours time with a crew of three men.

As the rings get worn, the interval between cleanings is lessened; until with badly worn rings, it is three weeks. The time between clean-ups also is influenced by the load carried and by the quality of fuel and lube oil.

About every 8,000 to 12,000 hours, we check bearings, liners, piston rings, pistons, wrist pins, bushings, timing chains and other parts that may need attention. This job requires five to six days with a crew of four men working eight hours a day. It takes about two days of this time to clean the pistons. We usually change all the rings at this time. If the liners are worn appreciably, it is advisable, and it pays well, to change the upper compression and the lower oil ring more often.

Our experience with diesels indicates that they earn their keep. They enable us to save stored water for future use. The storing of water in the spring allows us to increase the stream flow during the hot summer months. This practice improves the condition of the stream which naturally is worse during the hot weather due to low oxygen content. Coupled with the reduced oxygen content as pollution from the city and from industry wastes. The diesels also replace former purchased power which, in our case, amounts to a pay back of about two for one.

## Crown Zellerbach Service Awards

On May 11 employees of Crown Zellerbach Corp. at Port Angeles, Wash., whose tenure of service ranges from 5 to 40 years, received service pins at a dinner in their honor.

Louis Bloch, San Francisco, chairman of the board of the corporation, made the presentation to each individual. He also gave a talk in which he stressed the importance of every employee's part in the corporation. Although the company has over 11,000 employees, no one man's job is so low that his failure to fulfill it can affect the company's prosperity, he said.

William D. Welsh, public relations director of the firm, was master of ceremonies for the evening. R. A. Schadt, resident manager of the Port Angeles Division, introduced guests and welcomed the diners.

Leading the pin recipients was Charles L. Spicer, boss machine tender, who was honored for 40 years service with the corporation. Spicer came to Port Angeles from Camas, Wash. when the local mill opened, starting as third man on the No. 1 paper machine.

A 30-year pin went to Walter F. Lafeman, who came to the Port Angeles mill 25 years ago from West Linn, Ore.

## Sitroux Grants Wage Increase

UTICA, N. Y. — Employes of the Sitroux Inc. paper plants in Capron and Clayville, who went on strike 10 days ago, returned to work May 22 after accepting a wage increase of seven cents an hour.

The 350 workers are affiliated with Sauquoit Valley locals of the International Brotherhood of Paper Makers, AFL.

The workers returned under a new contract which runs until May 31, 1951. Under the conditions of this contract there is a seven-cent an hour increase across the board for all employes with other adjustments.

It also provides adjustment on individual job rates ranging from two to eight cents increase, three weeks' vacation for 15-year employes and time and a half for more than eight hours in any single day. Another provision is absence for three days with pay in case of death in the immediate family of an employe.

## New Brunswick's First Forestry Week

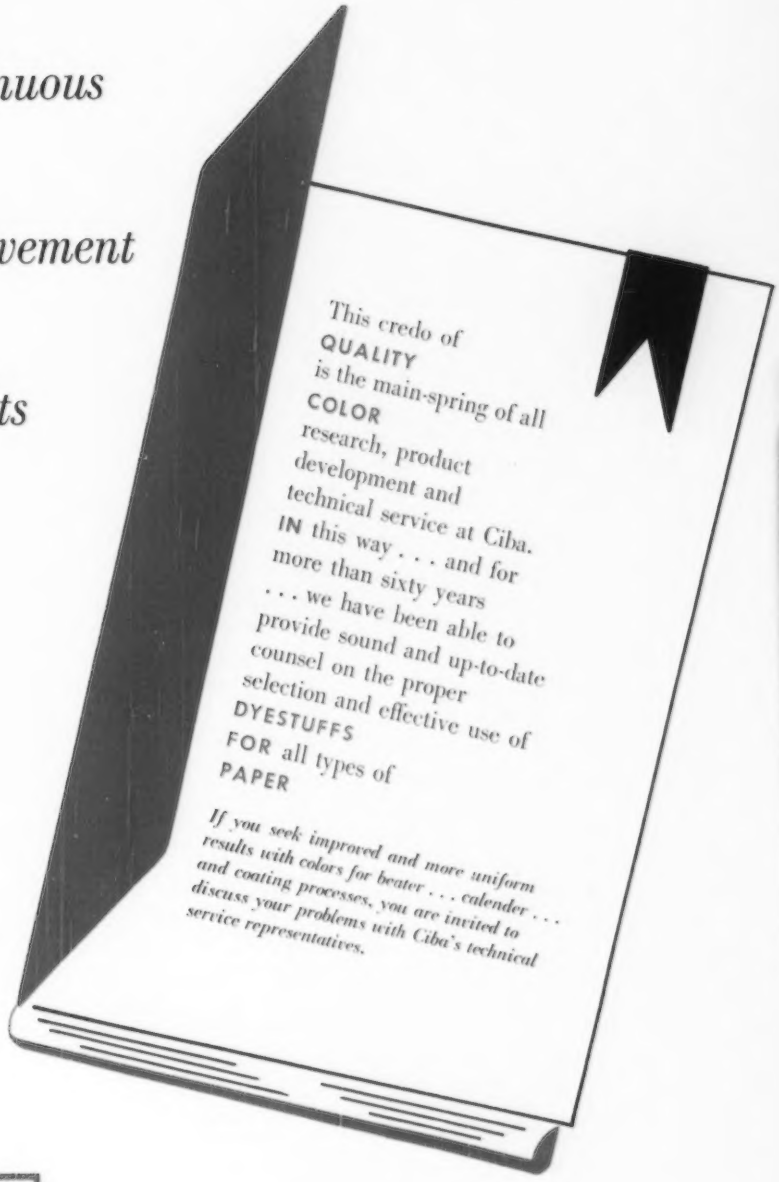
FREDERICTON, N. B. — The week of May 21 was observed throughout New Brunswick as "Forestry Week" by proclamation of the Lieutenant Governor, Hon. D. L. MacLaren, in the *Royal Gazette*.

The move was recommended last year at the annual conference of the Maritime Section of the Canadian Society of Forestry Engineers as well as the New Brunswick Forest Rangers Assn.

Observance of Forestry Week, first in the history of the Province, was marked by special instructions on the importance of forestry conservation, fire protection and general woods husbandry in all schools. This was achieved by merely stepping up the year round Keep New Brunswick Green program of the Green Forest League.

The public was drawn into the program via messages in both newspapers and radio from Government officials as well as officials of the industry. New Brunswick's total pulp wood cut last year amounted to $68 million in addition to the millions of dollars which were circulated in handling, cutting, and shipping the product most of which went South of the Border.

# Continuous Improvement Benefits All!


This credo of
QUALITY
is the main-spring of all
COLOR
research, product
development and
technical service at Ciba.
IN this way . . . and for
more than sixty years
. . . we have been able to
provide sound and up-to-date
counsel on the proper
selection and effective use of
DYESTUFFS
FOR all types of
PAPER
If you seek improved and more uniform results with colors for beater . . . calender . . . and coating processes, you are invited to discuss your problems with Ciba's technical service representatives.

CIBA

CIBA COMPANY INC.

627 GREENWICH STREET, NEW YORK 14, N. Y.

Boston Chicago Charlotte
Providence San Francisco Philadelphia

# Filtration and Papermaking

B. L. KASSING

Nekoosa-Edwards Paper Co., Port Edwards, Wis.

After agreeing to take part in this Fine Paper and Tissue program, I was embarrassed to discover that I didn't know the difference between fine papers and coarse papers. Further, I was unable to determine just where tissue stops being tissue and becomes something else. It is hard to admit this ignorance after some years of connection with such papers. I can only hope that the general topic I have been forced to select will be acceptable.

For some time I have had the feeling that we, as papermakers, tend to approach problems from an unnecessarily restricted viewpoint. For instance, fine paper problems are discussed as though totally unrelated to the problems of other papers. Cylinder papers are considered as though entirely different from Fourdrinier papers. Tissue production appears to be regarded as an entirely different operation from other papers. The basic sameness of all paper and paper production is usually forgotten; after all various grades are merely variations of the same thing.

It seems to be that rather artificial or merely convenient commercial distinctions have worked to obscure some fundamentals of general nature. The limitations of our approach have tended to narrow our considerations to details rather than general principles. While details are of unquestioned value, fundamentals are vitally important so that it seems that an approach from a comprehensive basis could be worth while.

In any event, I had need for a simple and rational explanation of papermaking, because it was necessary for me to relate different papers and techniques on some fundamental basis. Further, at one time or another, I have been forced to apply experience gained in one field to conventionally different fields. These needs led to an attempt to develop an analysis of the basic principles of paper making. This work has been useful to me, consequently it appeared worth while to discuss some part of it briefly at this time.

I am not so naive to expect that such an analysis will revolutionize papermaking, nor will it solve all our problems. It is quite true that cylinder problems require a different technique than Fourdrinier problems. Nevertheless, in my opinion, the problems involved in all papers differ only in degree or in the manner in which they are manifested. In other words, the problems of tissue and heavy weights, fine papers and coarse papers, cylinder and Fourdrinier originate in the same phenomena. Basically, they appear for the same reasons regardless of the type of paper or type of machine concerned.

It has been useful to me to think of paper machines as devices to remove water from paper stock and deliver the stock in such a sheet that it may be profitably sold. Quite obviously, this definition covers any paper or pulp machine of the usual types. Further, regardless of the kind of machine employed, the wet end process is plainly filtration if we accept the usual engineering definition of filtration.

It must be pointed out that in most filtrations, the efficiency of the separation and the capacity of the filter are usually the important aspects of the process. In papermaking, the efficiency of the filtration is taken for granted until the state authorities begin to talk about stream pollution. The filter mat or sheet produced is the principal concern of papermakers.

In this connection and in contradistinction to ordinary filtrations, we are frequently more concerned with the internal structure of the sheet than we are in its general appearance or overall characteristics. This concept is because the filter mat in sheet form is the end product in papermaking. In ordinary filtration, the filter mat is an intermediate or waste product.

By sheet structure I refer to the relation of individual fibers to each other; the number, intimacy and nature of contacts; the area of contact and all the possibilities of interlacing or braiding effects of the fibers. I can only indicate the certainty that these effects exist and determine sheet characteristics. Actually little or nothing really is known about the structure of a sheet of paper and the forces which hold the various elements together.

Regardless of this lack of knowledge, we do control such infinitely fine fiber relationships to some extent. This is so whether we are making Fine or Coarse papers, Tissues or Boards, whether we use a Fourdrinier or Cylinder machine. We adjust the structure and resulting characteristics of our sheets largely by altering the filtering characteristics of our furnish and to a lesser extent by modifying the conditions of filtration or formation.

As in most operations, we are vitally concerned with the entire system. For this reason it is practically impossible to think about papermaking even superficially without being concerned with the behavior of water in motion and the peculiar effects produced as a fibrous mat is laid down from a moving stream of water.

In can offer no definite proof that the motion of the stock affects the sheet structure. I can only say that most paper characteristics indicate a type of structure which would be expected if the structure was influenced by the flowing fluid as well as the filtering characteristics of the stock. The hypothesis developed has been useful not only in leading to a rational explanation of papermaking but also in actual problems of design and operation. Just as important perhaps, it has established the valadity of some of the old techniques and rules which have been used for many years.

For instance, there is the old saying, "Paper is made in the beaters." This old saying is literally true in the sense originally intended even though we may have substituted some type of refiner for beaters. The reason that it is so is because beating or refining of the stock determines the compactness and compressibility of the mat or sheet. To a very considerable extent it also governs the intimacy and extent of fiber to fiber contacts. This in turn determines the filtering characteristics of the mat or, as we call it, the freeness of the stock. The freeness of the stock determines the capacity of the wire or cylinder as a filter. Thus beating or stock prepara-

Presented before the Annual Meeting of the American Pulp & Paper Mill Superintendents Assn., Chicago, Ill., June 8-10, 1950.

tion determines the characteristics of the sheet produced as well as the capacity of the machine.

Most sheet characteristics appear to be explainable on the basis of filtration analysis. We all recognize that machine-made paper has a definite grain. We usually accept as fact that cylinder sheets exhibit greater differences with and across grain than Fourdrinier sheets. I think that the origin of grain lies primarily in phenomena of fluid-flow wherein at some velocity or speed the fibers tend to line up with the general direction of flow. For this reason, grain originates at or very close to the slice.

I admit that this involves considerable speculation, however, it is not unreasonable on the basis of what is known about flowing fluids. The great number of failures to eliminate grain justify the conclusion that some fiber alignment is inherent in our processes of making paper.

This primary alignment is still further increased by any differences between wire speed and stock velocity at the instant of contact of the stock on the wire. This is a mechanical effect and can be quite important because it is partially controllable. When the wire speed exceeds the stock velocity, a sort of a combing effect appears inevitable. When the slice velocity exceeds the wire speed, increased alignment is more difficult to explain but it certainly occurs.

It must be noted that other conditions, particularly drying, develop grain effects. These effects cannot be ignored and may be very important since, in general, they are detrimental effects. Drying conditions, however, are outside the scope of this discussion.

When we must minimize directional differences, we generally find observance of a well established principle of maintaining the stock velocity as close as possible to the wire speed. When directional differences are not undesirable, we usually find some difference in wire speed-stock velocity.

The extreme directional effects shown by cylinder papers seem to be due to the mechanical effects produced by differences in speed between the stock and cylinder wire. Analysis shows that it is extremely difficult and in some cases impossible to cause paper fibers to contact the cylinder with the same velocity as the cylinder. This accounts for the fact that grain differences are more pronounced in cylinder sheets than with Fourdrinier sheets. The difference appears to be due entirely to the conditions of filtration under which the sheet is formed.

There seems to be a widely held opinion that the shake on a Fourdrinier serves to cross the fibers and thereby reduce grain. This appears to be the basis for numerous attempts to reduce grain effects by agitating the stock in cylinder vats. Such devices can be of little help in this regard. Actually, on a Fourdrinier, the shake merely jars aggregates or clots together. It has no particular effect on the arrangement of individual fibers. It does, of course, improve or level the visual formation but the sheet structure and arrangement of individual fibers can be affected only very little.

All of us recognize that paper is two-sided. This two-sidedness is more than a simple difference of color or finish—there is an actual structural difference between the two sides. This structural difference results from the condition of the stock and the conditions of filtration on the wire. This lack of uniform structure is responsible for many of the undesirable characteristics frequently shown by paper and is inherent in our methods of sheet formation. While we may succeed in minimizing this undesirable structural difference, we can never totally overcome or eliminate it.

This is because the two sides of the sheet are formed under totally different conditions of filtration. First of all, wire side fibers tend to become aligned in the machine direction to a greater degree than the top side fibers. Second, and equally important, fine elements of the furnish tend to wash out of the wire side, and possibly become concentrated on the top of the sheet. Thus the density of the top side is higher than the wire side. For these reasons, two-sidedness is a difference in structure between the two sides. This difference results from the fact that the two sides are composed of elements of different dimensions in different structural arrangement.

The result is a sheet which curls under the slight provocation of humidity changes since its expansion-contraction characteristic is different on the two sides. It is inherently unstable if free to respond to strains. It may also be remarked that the two-sided structure of the sheet precludes the possibility of the same drying rate occurring on the two sides. Due to this, we may produce paper which is warped or has a permanent curl when made.

If there are any printers or other paper buyers present, it is to be noted that I only said that we may produce curled paper. I did not say that we do.

I am very conscious of having ignored many important aspects of papermaking. This is only because I have attempted to stick to one important process which is fundamental and basic to all papermaking. This process is filtration, and supplementary processes and operations have only been mentioned.

In closing, please feel free to question anything I have said since it is only by discussion that we can hope to arrive at anything resembling true knowledge of papermaking. If we can develop fundamentals, rather than details of papermaking, we can remove some of the misunderstandings and misinterpretations of observations and thereby eliminate some of the handicaps to progress.

## Scott Plans Office Building

CHESTER, Pa. — Scott Paper Co. has applied to the Chester Zoning Board for approval of the construction of an eight-story office building at its paper manufacturing plant in Chester, Pa. While the company proposes to limit the initial construction to four stories to meet immediate needs, it is expected that expanded manufacturing operations and increased office personnel will require the additional four stories in the next few years.

It is estimated the construction of the presently planned four story building, together with alteration and modernization of existing office facilities, will cost approximately $1,425,000.

The building will be of fire-proof construction with white face brick exterior, similar to that of the company's other extensive plant buildings in the area. The new structure will accommodate the executive staff and some two hundred members of the sales, advertising, public relations, engineering, technical service, purchasing, and personnel departments, together with certain laboratory and medical facilities.

It is expected to take a year for the completion of the building.

## Reliable Represents Whiting Paper

HOLYOKE, Mass.—Reliable Paper Co., 215 W. Institute Place, Chicago 10, Ill., has been appointed selling agent for flat papers in Chicago and surrounding territory for the Whiting Paper Co.

Announcement is also made that effective May 1, Frank J. Foley has opened offices at 111 W. Washington street, Chicago and will devote his entire time in representing the interests of Whiting in the mid-western territory.

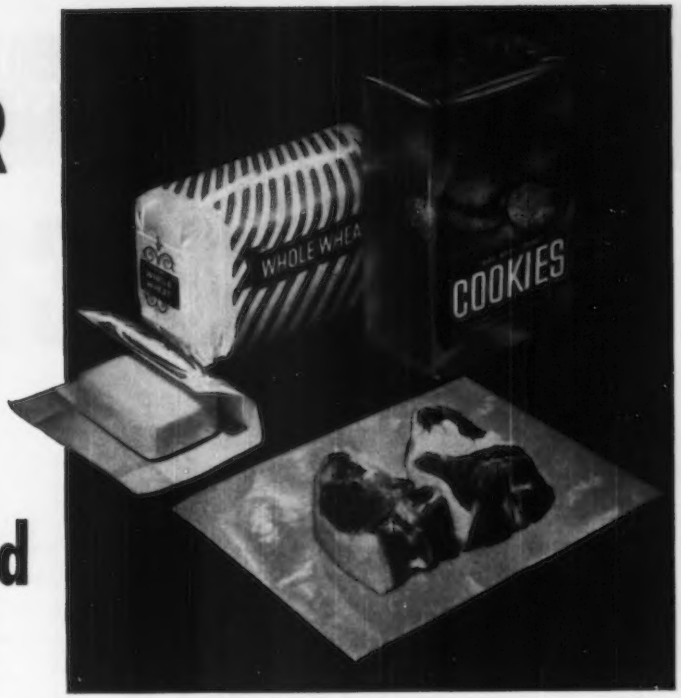
## To Study Canada's Anti-Trust Laws

OTTAWA — A special committee of the Canadian Manufacturers' Assn. is to be established immediately to study Canada's combines and anti-trust laws, making recommendations to the Canadian Government. This decision by the national organization to make its own independent study of the anti-trust policy of the Government followed recommendations by R. M. Fowler, president of the Canadian Pulp and Paper Assn. The latter claimed that the federal regulations now in force are ineffective and unintelligible.

## Canada's Forest Fires Set Record

OTTAWA — Hon. Robert Winters, Minister of Resources and Development, states that "during the past year Canada suffered the greatest forest fire loss in more than a quarter of a century." This is indicated in the 1949 forest fire statistics for Canada which the Department has now released. Newfoundland figures were included for the first time in the annual official report on forest fires.

# GREATER SALES APPEAL for your wax-coated papers . . .




Just a small percentage of "Alathon" Polythene Resin added to wax gives your papers a tougher, more brilliant coating with increased grease resistance. Papers coated with these blends have greater freedom from blocking. The coating stays more flexible at low temperatures.

You'll find your papers have much more sales appeal. There's a ready market for these improved coatings for bread, soap and frozen-food wrappers, locker paper, cake boards, butter cartons and many other paper products. Best of all, you can easily apply "Alathon" and wax blends to your paper with your present equipment.

Make sure you get complete information about Du Pont "Alathon" Polythene Resins . . . write today for free booklet. It contains data and suggested uses for these versatile paper-coating materials. Du Pont Technical Representatives will be glad to work with you.

### OPEN NEW MARKETS WITH PURE "ALATHON" COATINGS

Papers with pure "Alathon" coatings can be used where paper could never be used before. "Alathon" coatings make your paper resistant to:

| | |
|---|---|
| WATER | SOLVENTS |
| ACIDS | FERTILIZERS |
| ALKALIS | OILS |

SURFACE ACTIVE AGENTS

Du Pont "Alathon" Polythene Resins also give paper a tough, brilliant finish that stays flexible at extremes of temperature. Think of how "Alathon" paper coatings can expand your present markets . . . and develop new ones!

DU PONT
REG. U.S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

**ALATHON** (TRADE MARK)

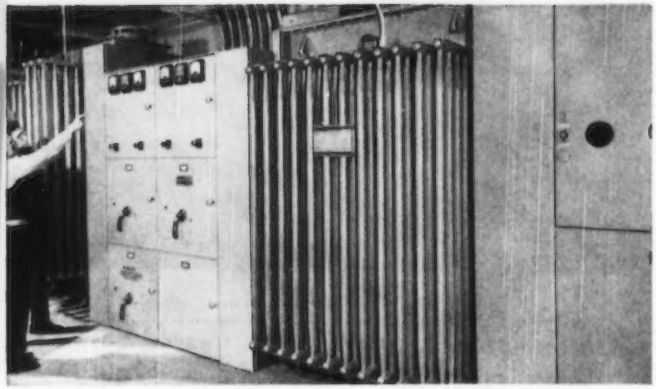
*Another Product for the Paper Industry from*

**Polychemicals DEPARTMENT**

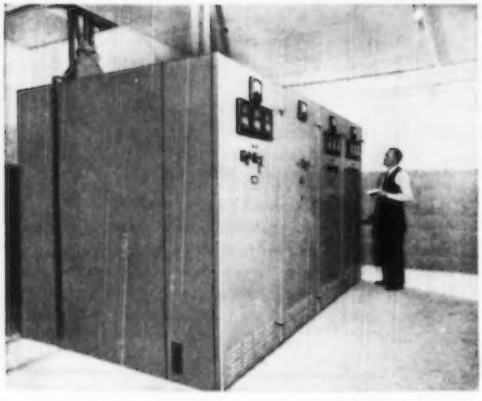
E. I. DU PONT DE NEMOURS & CO. (INC.), WILMINGTON 98, DELAWARE

# Scott GETS RELIABILITY

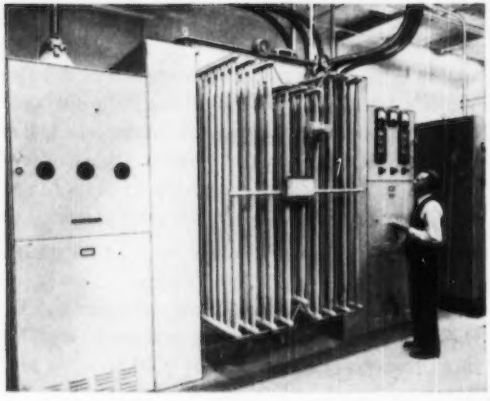
# G-E LOAD-CENTER



Double-ended load-center unit substation with 1500 and 1000 kva transformers. This unit receives incoming power at 13.2 kv and distributes it at 600 volts to steam plant auxiliaries and finishing equipment. Blades of air interrupter switch (right) are clearly visible through window, another safety feature of G-E unit substations.



R. E. Neilson, Electrical Superintendent of Marinette Paper Co., looks over the G-E 15-kv metal-clad switchgear that handles the 13.2 kv incoming power through three Magne-blast power circuit breakers. Metal-clad switchgear is neat in appearance, saving in space, and offers operating safety to personnel. Additional sections can be added for future expansion with a minimum of bother and expense.



General Electric 1500 kva load-center unit substation that supplies power to No. 4 paper machine. Air interrupter switch on the primary is easy to operate, blades are easy to see. Air circuit breakers on the low-voltage side are rated 1600 amperes, have plenty of "IC" (Interrupting Capacity) to handle all short circuits. Note entire load center is metal-enclosed, thus offering operating safety to personnel.

# PLUS FLEXIBILITY WITH ···

# UNIT SUBSTATIONS

*"We can't afford to take chances with an inadequate power system because a breakdown would mean a major loss in both production and time. Our General Electric power-distribution system gives us the reliability and flexibility we need. If there should be a major fault we'd still be able to operate at slightly reduced capacity.*

*"The installation of this equipment was made without any trouble and we quickly changed over from our old system on a three-day weekend."*

R. E. Neilson, Electrical Superintendent
Marinette Paper Co. (subsidiary of Scott Paper Co.)
Ft. Edward, New York

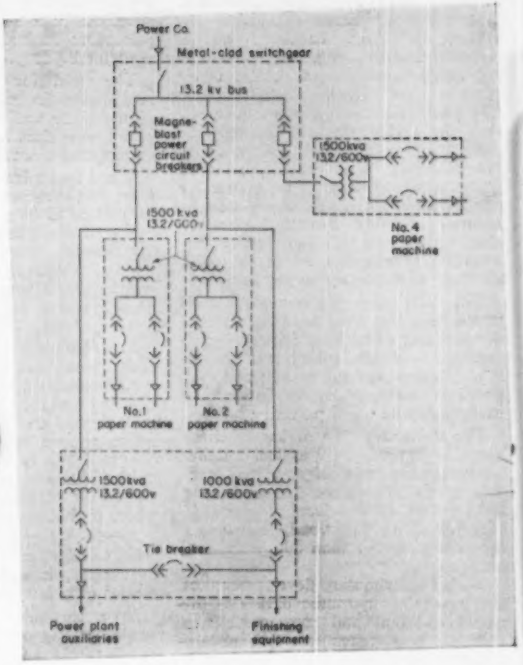
**CHECK THESE FEATURES OF G-E LOAD CENTERS ···**

SAVE TIME by eliminating weeks spent over drawing boards detailing individual items. G-E factory-assembled unit substations are quickly and easily installed with lower material and labor costs than required for "piece-meal," makeshift affairs. No last minute "alterations" with hacksaws and cold chisels when you order G-E unit substations.

NEAT APPEARANCE Note the smooth, integrated appearance of these G-E unit substations . . . no more gawky, "old style" stovepipe connections between transformer and switchgear.

INVESTIGATE TODAY how General Electric unit substations can be used in your plant for efficient, flexible power distribution. Contact your G-E sales representative for further information, and write today for the helpful bulletins listed below. *Apparatus Department, General Electric Company, Schenectady 5, New York.*

**GEA-3592 Load-center Unit Substations**
**GEA-3758 Load-center Power Distribution**
**GEA-3083 Metal-clad Switchgear**




Here's the one-line diagram for Marinette Paper's Ft. Edward installation. The tie breaker on the double-ended unit substation makes it possible to shift the power supply in case of a primary fault, thus assuring continuous production at reduced capacity.

Metal-clad switchgear distributes the 13.2 kv incoming power to four G-E load-center unit substations where the high voltage is stepped down to 600 volts for utilization—right at the center of the load area. This eliminates long, costly secondary feeders.

The Scott installation is a complete General Electric project—one source of responsibility plus the very best in co-ordinated planning, engineering, manufacturing, and service facilities to give maximum savings and efficiency to the customer.

*Be sure to see the "More Power to America" full-color sound slide-film "Modern Industrial Power Distribution." Ask your G-E sales representative to arrange a showing for your organization.*

GENERAL ELECTRIC

# Wood Room Losses and Their Control

VANCE P. EDWARDES
Consultant, Corinth, N. Y.

Management has paid far too little attention to wood, its species, quality, storage and the combined effect of these factors on the cost and quality of paper. Much less attention has been paid to wood room operations involving handling, barking, sawing, cleaning and chipping, and the resultant large wood losses, which occur far too often because of this neglect. The possible cause for such an attitude may lie in the fact that most mills were built when wood was a cheap raw material. With present pulpwood prices, however, there is no excuse for neglecting the savings which can be secured. Neither can the operating staff be excused for not calling this situation to attention of management as often as necessary to get action.

The first step in reducing wood waste resulting from barking was the development of barking drums of various types — batch, rotary and stationary. The average saving of wood over previous methods of knife barking easily amounts to 15 percent.

The stationary type of barker eliminates brooming. It also has another advantage in its ability to handle 8-foot sticks. The wood loss in sawing 8-foot logs into 4-foot is about ½ percent. With $30 wood, this saving amounts to better than 30¢ per ton of chemical pulp.

The Weyerhauser development of the whole log hydraulic barker is the most important and spectacular step that has been taken in years toward reducing wood room losses. Savings in wood with this barker have amounted to 18-20 percent over the previous cut-up mill practice. To realize these savings, however, has required pioneering engineering and very heavy investment.

Bark removal from whole logs has been the goal of many inventors. Tied in with it has been the development of a chipper capable of handling the wood in the same form.

The development of the hydraulic barker for small round wood closely followed the Weyerhauser installation. In turn and shortly afterward, it was followed by a hydraulic slab barker.

The wood loss in the small hydraulic barker probably is close to 1½ percent. This figure is an improvement over normal drum barking loss of 3-4 percent.

Presented before the Annual Meeting of the American Pulp & Paper Mill Superintendents Assn., Chicago, Ill., June 8-10, 1950.

While it is true that the place to start getting clean pulp is the wood room, much unnecessary cleaning still is being done by knife barkers, knot borers, wood peckers, beavers and knot saws. All of these machines have their place; but far too often they are not used intelligently.

The need for proper wood room supervision is too often overlooked. It would be well worth while to secure a first class man for this job and to pay him a worth while salary.

Wood losses from the type of equipment just mentioned have been known to amount to 30 per cent. An overall figure of 20 percent is not uncommon. If, through proper supervision and without sacrificing cleanliness, this loss can be cut 5 percent—there is a potential saving of $1.50 per cord of wood.

Some sulphite mills, which receive peeled wood and bleach all their pulp with three stages, have eliminated hand cleaning in the wood room. These mills depend on screening and bleaching to remove the dirt. With this picture so definitely established, operation emphasis should be on proper control and on the addition of auxiliary equipment, if that seems necessary.

Another factor closely connected with wood room losses that is often overlooked, is stream pollution from wastes of this type.

In a particular mill handling 500 cords per day, two-thirds of which is rough, the wood room loss, based on figures collected over a number of years, amounts to 2.5 percent on peeled and 4 percent on rough. This loss would be appreciably higher if there were not a sulphate mill, in addition to the sulphite, to take cull wood without cleaning. In this particular mill, the cull on spruce and balsam averages 4 per cent on peeled and 7 per cent on rough. The first mentioned losses, namely 2.5 percent on peeled and 4 percent on rough, are made up of sawdust, broomed ends slivers and knife barker waste. The refuse from the barking and washing drums goes to a perforated scraper conveyor, the solids being delivered by it to a bark press and the water to sewer. The solids in the sewered water amount to 13,000 pounds per day of wood fines and 6,000 pounds per day of bark. In comparison, the fiber losses from the entire mill—pulp mills, bleach plant and paper mill—average 19,100 pounds a day. The seriousness of the problem can be seen from such comparative figures.

Naturally the quickest way to prevent the fines from reaching the river is to install screens. Most of the material can be removed in this manner. Then they can be burned after pressing. Whether such an operation will pay for itself is questionable. At least it will greatly reduce the pollution load on the river.

The measurement and control of sawdust produced by the chipping operation is not difficult. Then too, the reduction of losses from this source can result in real savings.

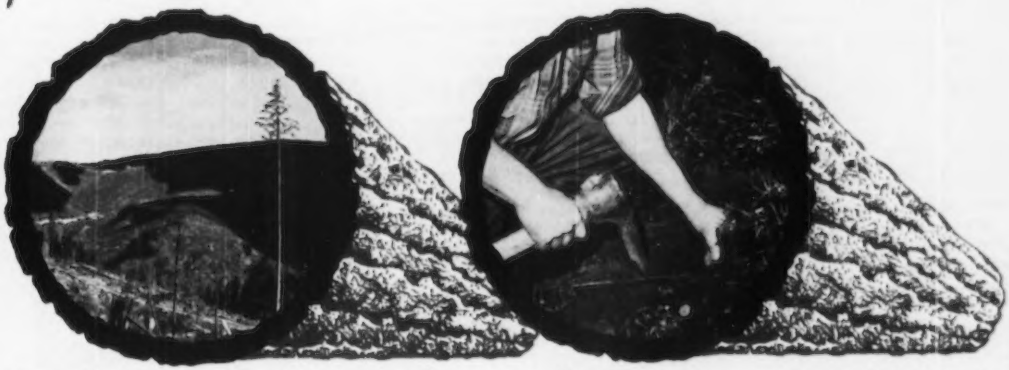
In Technical Association Papers (June, 1939), the writer published an article dealing with chipper operation. This article placed emphasis particularly on sawdust losses. While much of the data in that article are outdated (since all the runs were made on four knife chippers), the conclusion relative to sharpness of knives still holds—that is, dull knives increase sawdust by one-third. Therefore, the best knife definitely is the cheapest in the long run; and changing knives is better practice than filing.

The conditioning and adjustment of the bed-plate is often neglected. This neglect results in higher wood losses, both sawdust and slivers. Recently, the writer saw a multiple-knife chipper in one mill; a four-knife chipper, in another. The individual locations were on opposite sides of the country. The bed plate of the multiple-knife chipper had not been changed in five months; that of the four-knife, in a year.

Sawdust measurement can be secured simply and cheaply by the installation of an automatic calibrated dumping bucket and counter. It can be homemade; or it may be purchased.

Sawdust remaining in the chips after the screens, also must be determined if the correct figure for total sawdust produced is to be arrived at. A good average figure for total chipper sawdust is 2 percent passing 0.128 in. mesh. Some operations produce less; but far more, greatly exceed this figure. The industry-wide average for chipper sawdust must be at least 3.5 percent. If this figure is reduced to 2 percent the wood saving, in a 100-ton chemical pulp mill, would amount to nearly 3 cords a day, or with $30 wood, approximately $90.

# ...this is Tree Farming



Seed Blocks Restock Cutover Land

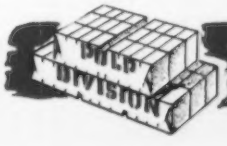
Hand Planting on Burnt-Over Areas

Young Second Growth on a Tree Farm

Spotter Plotting a Fire Location

A forest is not like an oil well or a mine... consisting only of a given amount of irreplaceable material. Forests are *living things*... and given a fair chance will reproduce themselves, barring complete destruction of the seed source. In fact, for years it has been a Weyerhaeuser tenet that..."Man cooperating with nature can provide a new forest as good or better than the original." To further implement this basic concept of forest management, Weyerhaeuser has joined others in the forest industry in establishing over two million acres of certified tree farms in Oregon and Washington.

The Pulp Division, Weyerhaeuser Timber Company, will benefit from this enlightened cooperative forest management program through a guaranteed source of supply for its sulphite and sulphate pulp mills.




WEYERHAEUSER

A rapid method of chip analysis, particularly sawdust analysis, should be provided for the use of the chipper room foreman. Such a provision would make it unnecessary for him to wait for results from the control department, the figures of which usually are a day late anyhow. With the method available to him, he can check operations as often as desirable.

Much help can be gained by recording the quantity of sawdust produced on a graph. Such a graph makes it possible to watch trends—noting the effect of wood variations and the results of any changes made on the chipper itself, such as knives, face plates and bed plate, also chip length. Naturally, the shorter the chip, the more sawdust produced.

While the multiple-knife chipper is superior to the four-knife, it is no cure-all. Sawdust production is no less with it than that which can be secured with a four-knife in good condition and properly operated. Chip size, however, with the multiple-knife chipper is generally more uniform—less slivers and slugs. More uniform chips mean increased digester capacity, lower knotter rejects, less tailings and labor, and less steam to bring the chips out of the bins.

In order for such savings to continue, a multiple-knife chipper must be maintained. It can not be installed and then forgotten or neglected because of other more important repairs elsewhere in the mill.

An appreciable improvement in chip quality and sawdust will result from operating a multiple-knife chipper at or near capacity. In a test run with such a chipper at 20 cords an hour, 1.5 percent sawdust was produced. At 50 cords an hour, there was 1 per cent sawdust with less oversize material and greater chip uniformity.

Some reduction in sawdust loss can be realized by rescreening the rejects of the chip screens and saving the pegs and toothpicks. This gain is particularly true if a large mesh is used on the sawdust tray or if a relatively large amount of hand cleaning is done. Either a rotary or shaker screen will be satisfactory for the secondary screening.

One unfortunate feature connected with most of the foregoing comment is the inability, in general, to prove savings in wood of say up to 5 percent. So few mills are equipped with means of measuring wood into the wood room or even wood losses which occur to reveal this information. In fact, any savings made will not be reflected in pulp costs. They will show up only in the wood pile at the end of the season. Even though the operating staff will be sure of reduced losses, management still will be hard to convince. Operation, then, can take satisfaction only in a job well done.

# Utilization of Weather Information by the Pulp and Paper Industry

JOHN M. PORTER
Meteorologist, U. S. Weather Bureau, Chicago, Ill.

The utilization of weather information by pulp and paper mills is something that, if not already being done, should definitely be started, as there are many ways in which this weather information can be used to the benefit of the industry. I think the problem can best be divided into three main phases: (1) the fire weather program; (2) the problem of transportation; and (3) hydrology or water supply.

Let's look at the fire weather program first.

Your pulp and paper mills, as I understand it, control large holdings of timber in order to keep a supply of fibrous raw material flowing into them. It is these large holdings of timber and their protection that I have in mind when we consider the fire weather program.

At the present time, fire weather forecasts are issued daily by the Weather Bureau to the U. S. Forest Service and the State Conservation Departments. These forecasts emphasize the expected weather, winds and humidity for the next 24-36 hours. On the basis of the burning index at the time and expected weather from the forecast, the necessary preparations for protection of the forests can be made for the next day or two.

This burning index, for those of you who may not be familiar with it, is a series of numbers derived by the forest service by actual tests out in the field. Fires were started under various conditions, and observations made as to how fast they spread and build up under various weather conditions. From these tests it was found that the most important weather items affecting the beginning and spread of fires were: (1) the weather; (2) the winds; (3) the humidity; (4) the number of days since the last rain and the amount of this rain; and (5) the condition of the vegetation, such as green, dead, or intermediate.

From these observations, a table of burning indices, running from 0-100, was drawn up; and a slide rule was constructed to rapidly compute this index from the observations. This slide rule now is being used by fire control agencies. In fact, on the basis of present observations and the forecast for the next day, a burning index for the following day can be roughly computed.

Some of you are probably interested in just what these numerical values of the burning index mean in plain language; and what the ranges are, as well as the fire controls normally exercised in each case. Briefly, here is the way they work:

0-1, *Safe.* Fires will not spread beyond the heat of a camp fire or burning brush pile. No men specifically needed for fire control.

2-3, *Very Low.* Fires will start from an open flame but spread slowly and tend to go out. Lookouts needed for areas of special danger.

4-6, *Low.* Fires will start from a lighted match and spread until extinguished. Men needed on primary lookouts. Regular protection force on call.

7-12, *Moderate.* Fires start readily from a match, burn briskly and tend to spread rapidly as they increase in size. Regular protection force available. Secondary force on call. Secondary lookouts needed if visibility is poor.

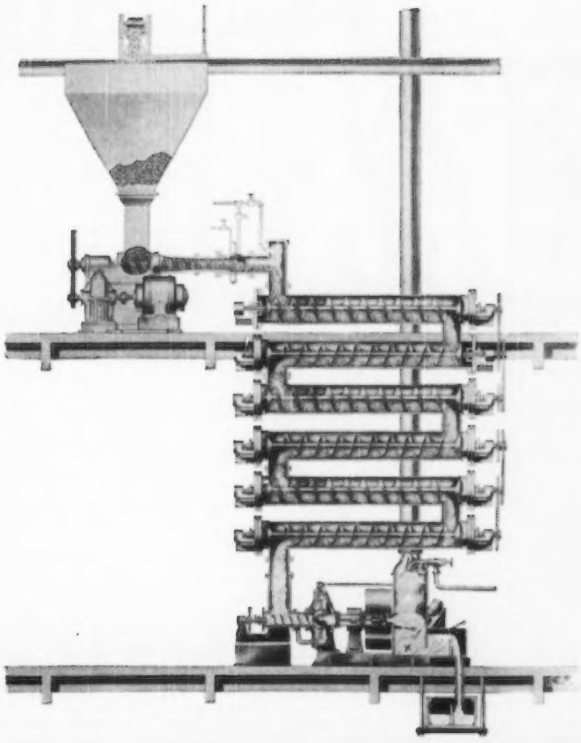
13-24, *High.* Fires start readily from a match or glowing cinders, spread rapidly and tend to crown in young growth. Regular and secondary protection forces should be ready for immediate action and reserve forces available.

25-49, *Very High.* Fires will start from a cigarette butt or sparks, spread rapidly and tend to crown

Presented before the Annual Meeting of the American Pulp & Paper Mill Superintendents Assn., Chicago, Ill., June 8-10, 1950.

# CHEMIPULPER

## The Continuous DIGESTER
### FOR CONTINUOUS COOKING OF CHEMICAL AND NON-CHEMICAL PULPS



**The CHEMIPULPER is a modern, *continuous* digester, now producing uniform pulp in over fifty operating units in U. S. mills, at a surprisingly low cost.**

**Such pulp is used for making .009 for corrugating; flooring, roofing and automotive felts, and insulating board. Other grades of pulp are made from either hard or soft woods, or mixtures of such woods.**

**Operates continuously in 150 to 175 p. s. i. steam pressure range. Uses either neutral sulphite or alkaline liquors.**

**Cooking factors of time, temperature and chemicals adjustable to conform to variables in raw materials and accurately meet predetermined requirements.**

**The Reaction Chamber is made in units and the number of these can be varied according to the degree of treatment required.**

**Reaction Chamber with continuous flight conveyor screws insures positive and uniform feed from inlet to discharge end of chamber.**

**Reaction Chamber screw speeds are adjustable by varying speed of Reaction Chamber Drive.**

***Illustration shows combination of multiple-unit Reaction Chamber with Asplund Defibrator.***

●

*Engineered and Designed in collaboration with*

LINK-BELT COMPANY

LUKENS STEEL COMPANY

ALLOY FABRICATORS, INC.

●

**Catalog upon request**

PIA INC.

**PAPER and INDUSTRIAL APPLIANCES, INC.**
**122 EAST 42nd STREET NEW YORK, N. Y.**

generally. Spot fires common. Men needed for emergency stations. Entire protection force needed. Volunteers and supplemental help may be needed.

50-100, *Extreme*. Explosive conditions. Fires start readily from sparks, burn fiercely, crown and spot generally and are all but uncontrollable. Maximum effort from all concerned.

This specification gives you a rather complete picture of the burning index, which is principally a weather factor. In addition, the forecaster or person responsible for the protection of the forest has to take in account the *risk* that is present. That would mainly refer to the human element, such as campers, etc., or such things as trains that run through the area. Also there is the *fire hazard*, which refers principally to the condition of fuels, etc., in the forest. These two items—the risk and the fire hazard—along with the burning index, comprise the fire danger — the sum total of all three variables.

Thus you can see that a person or persons charged with the responsibility of protecting the forests or holdings of timber can with this information make plans for the protection that is needed. Weather forecasts, which help determine the burning index, also can be used to help figure what the risk will be. For instance, a forecast of a good week-end naturally will draw many campers into the area, if such is allowed, and their risk will go up. As I have previously mentioned, with the aid of the weather forecast, the burning index also can be computed for the following day, and this practice is common. With the fire danger high and a forecast of no rain and low humidities, a ranger can make necessary preparations to call out additional men and get additional supplies available in case of fires. If the burning index is low, and the forecast indicates it will stay low, no such preparation need be made.

The fire weather forecasts, to sum it up, provide valuable information for persons in charge of protecting forests, etc.; and with the large holdings that your companies hold, I think they furnish a most valuable piece of weather information available for your industry. They should help to keep fires at a minimum, and thus save more and more of your raw material; and, in the end, the whole industry would be dollars ahead.

The second phase of our problem was that of transportation.

As I understand it, contrary to what was the case a decade or more ago, the wood supply for your mills is being brought from greater distances as time passes and as transportation improves. With the improvement in mechanical transportation, both in rail and truck, these facilities are being depended on more and more for transporting the wood to the pulp mills. It is this type of transportation in which weather and weather forecasts can be of considerable importance. Especially in certain parts of this country and in Canada, a long period of wet weather can make roads almost impassable; and trains may have trouble due to washouts, etc.

Forecasts now are issued which, up to three days in advance, normally should be sufficiently accurate to help determine the method of transportation to be used; also whether there will be enough delay in the arrival of wood to cause your supply to run out, or to slow down your production. Of course, where water transportation is used, weather is not quite as vital as in other methods of transportation; but even here heavy rains can cause trouble.

These short range forecasts, therefore, I believe can definitely be made useful in your problem of transportation of pulpwood to the mills. In addition, considerable valuable weather information is available in climatological records. These records would show, over a long period of time in any particular area, what periods of the year are usually bad for transportation. In these periods, it would be wise to increase the stockpile of wood in case transportation broke down due to poor weather. I think that this problem might be more acute in northern sections than down in the South, where weather probably has less influence on transportation.

The third and probably the most important aspects of the problem in which weather information can be utilized by the pulp and paper industry is that of hydrology or water supply. This problem is not only important from the long range viewpoint, but also on the short range.

Quantitative forecasts of rainfall expected in the next 24 and 48 hours are made daily for the U. S. Engineers for all sections of the country where rivers exist. Inasmuch as practically all of your mills are situated near rivers and many of you make use of dams for storing up water for your daily use, it is important to know whether rain is forecast and whether amounts will justify the emptying of a dam for some reason—also if water supply is running low, whether additional rains are forecast in the next few days, or whether operations should be slowed down. Some of these problems, I know most of you are more familiar with than I; but I am sure that precipitation forecasts that are now made can be used to advantage by your industry. These precipitation forecasts forecast actual amounts. While they miss some of the time, as you well know, I do believe they will give you some definite information which you otherwise would not have in planning your operations and activities for a couple of days ahead.

Looking at the long range aspect, I understand from some of your own men, that water supply is the number one item in locating a new pulp and paper mill. Transportation, improved as it has during the past decade, made it possible for mills to be located much farther away from their wood supply than was the case a number of years ago.

In the United States, and I believe the same applies to much of southern Canada, rather complete records are available as to the yearly amount of rain that normally can be expected in any one area. This information can be of great importance when it comes to selecting the proper place for a mill. Also, it can tell you whether the rivers or lakes from which you draw upon for your water supply, can be relied upon for a steady and sufficient supply, inasmuch as your drain on this supply is quite large. All such information should be available in local climatological records.

In the case of mills in the deep South, I know some of them are concerned with the rapidly lowering water level. About the only thing I can say in that regard is that, based on the normal yearly amount of rainfall in that region, one can compute how much the water level is going to be increased from nature's supply, and subtracting the amount your mill takes away, you can get some idea on the eventual outcome. Of course, underground water supplies are tricky. They frequently originate from areas some distance away from where they are tapped. All in all, however, the amount of rain that falls in a given area is going to determine the amount finally available. I think a study of this sort, if not already made, has considerable merit, especially if you are in the process of picking a location for a mill, and know your requirements as far as water is concerned.

I have covered somewhat briefly as to how the pulp and paper industry can utilize weather information. I would like to say that there are a number of private meteorological concerns, located in various parts of the country, the business of which is to fit weather information that is available to the particular needs of their clients. Some of you may want to make use of one of these organizations occasionally.

To sum up, here are the weather information services now available, which I think your industry can make great use of if it is not already doing so.

1. The fire weather forecasts to help protect your large holdings of forests and timber.

2. Quantitative precipitation forecasts to determine the changes in your water supply, especially those of you that use dams or use water for electric power.

3. Climatological information for the region you are concerned with to determine the available water supply on a long term basis; and also, in the case of transportation, to determine whether you will be able to keep the raw materials coming in at a regular rate, or whether you will have to keep an unnecessarily large stockpile of wood on hand.

# Sutherland Continuous Beaters

have proved that they can do MORE with LESS than any other stuff-preparation equipment. The advanced engineering and high unit-capacity of Sutherlands provide . . .

# MORE

**QUALITY**—**better formation, smoothness, finish and higher test**
—**without fiber destruction**

**Production Speed**—**faster drainage**

**Flexibility**—**wide beating range**

**Profit**

*with*

# LESS

**Investment per ton**
**Maintenance**
**Space**
**Power**

Ask us for our catalog.

# SUTHERLAND REFINER *Corporation*

**TRENTON, NEW JERSEY**

Manufactured in the United States by Valley Iron Works Co., Appleton, Wisconsin
Sutherland Refiner Ltd., Windsor Hotel, Montreal, P. Q.

# Is It Always the Paper?

MICHAEL H. BRUNO[1]

I am interested and engaged in lithographic research, and I am here to tell you about some of the problems we have run into recently that have been blamed on paper. I want to tell you how we have been working to solve these problems, and by way of preview, I'd like to say that we have not always found the paper to blame.

As most of you know, lithography is one of the four main processes of putting ink on paper which comprise the Graphic Arts—the fifth largest industry in the United States. According to Department of Commerce figures for last year, 1949, letterpress grossed $1,300,000,000; lithography $625,000,000; gravure $60,000,000; screen stencil and other processes $125,000,000—a total of over $2,100,000,000.

For those of you who are rusty on your printing processes, I should like to review lithography for you briefly. It is the method of printing which depends on the principle that oil and water do not mix. A lithographic plate consists of two types of areas essentially on the same plane—the image or printing areas which accept ink and refuse water, and the non-image or non-printing areas which accept water and refuse ink. When a lithographic plate is printing on a lithographic press, the plate during each revolution, comes in contact with sets of both dampening and ink rollers. The dampening rollers transfer a weak, acidified gum solution to the non-printing areas and the ink rollers transfer ink essentially only to the image areas. During operation of the press, the ink film on the plate splits as it transfers to the rubber blanket; and again as it transfers from the blanket to the paper. The amount of solution and quantity of acid and gum needed in the solution to dampen the plate and keep the non-printing areas clean depends on the quality of the plate and the skill of the pressman. With proper handling of a good plate on the press, so little solution and acid are needed to print that no harmful effects are noticeable. On the other hand, a poor plate, along with careless handling on the press, requires the use of excessive quantities of acid, gum and solution for dampening. Some of this solution transfers to the inking system and becomes emulsified with the ink. Some of it attacks the image on the plate and weakens it. And some of it transfers to the blanket and eventually to the paper, causing no end of trouble in ink drying, misregister, and curl.

As you can readily see, lithography can be a complicated process. It has produced some of the most beautiful illustrations and examples of printing we have ever seen; but it is also subject to, and capable of, some of the most perplexing problems we have ever seen. The same problem has been blamed at different times on the paper, the ink, the pressman, or the plate. Sometimes, the blame was justified. But very often so many things happen that it becomes difficult to fix the blame or cause of the trouble.

Our problems are complicated further by the fact that the inkmaker often knows very little about paper; and the papermaker often knows less about ink; and neither knows enough about lithography. Fortunately, the lithographic industry has the Lithographic Technical Foundation which has been attempting for many years to fill the gaps left by this apparent ignorance. We have worked closely with the ink and paper manufacturers to learn the relationships between ink and paper and try to determine and establish the best conditions for lithographic printing. The improvements brought about by our work cooperatively with the ink and paper manufacturers are well known. Perhaps of equal importance to the improved handling of paper and ink lithographically has been our extensive work on improvements in platemaking. This work has made it possible to produce plates which can be printed on the press with a minimum of dampening solution and acid, and thus has practically eliminated a most frequent source of trouble . . . excessive moisture on the press, and the troubles it can cause as mentioned previously.

The fact that lithography uses water and the offset transfer principle makes many demands on the quality of the paper and ink it uses. The ink must be compatible with the dampening solutions used, and it must have the desirable strength and the properties to produce the right color and density after two transfers from the plate to the blanket and then to the paper. To the papermaker who knows little about inks anyway, these requirements seem very simple when compared to those he must meet in making paper for offset printing. Take, for instance, the requirements that the paper must be practically chemically pure so that there will be no harmful reactions with the ink, or plate, or dampening solution run on the plate. Take also the increased resistance over other papers to picking and splitting due to higher tack of inks used and the tack and pull of blankets. And then he still has pH, moisture content, linting, two-sidedness, static, etc. to worry about.

Many of the troubles we have encountered with paper in lithography can be associated with failure of the manufacturer to meet these requirements. Register and static trouble are associated with moisture content of the sheets. Troubles with drying of ink, curling (except reel curl) and, to some extent, scumming and tinting can be traced to the pH of the paper, its moisture content, and the use of excessive moisture on the press. Scumming and tinting can be caused by harmful ingredients in the paper; and linting, picking, and splitting troubles are traceable to poor characteristics in the paper.

These are the common paper troubles which we usually do not have much trouble in identifying. In all fairness to the papermaker, I'd like to say that the incidence of these troubles is greatly decreasing. In the past several years, however, we have run into some new problems that may be blamed on paper and also an increase of some old troubles. One trend has been very noticeable since the War, and this is the increased use of coated or enamel stocks by the lithographer. Another significant trend is the increasing use of lithography for book publishing. Some of the main troubles we have run into are definitely associated with these trends.

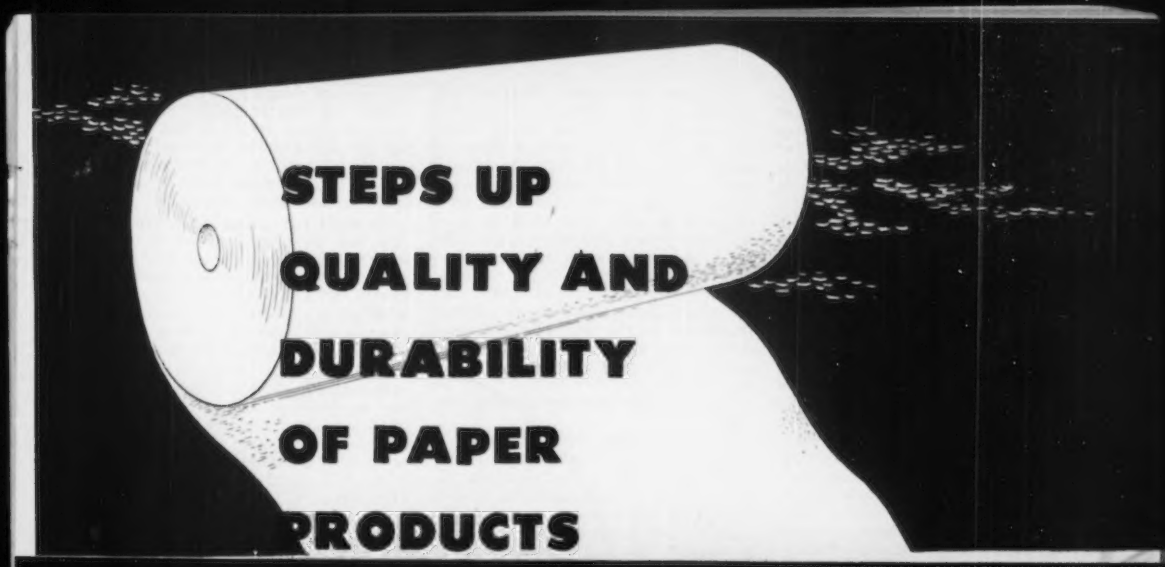
There have been three troubles connected with the increasing use of coated stock which have been blamed on the paper, and which we have investigated carefully. These troubles are *slur, embossing,* and *moisture absorption.* I shall take each of these troubles up separately.

*Slur:* The slurred impression, which shows up as filling in of halftone shadows and a "drag" at the back edge of solids and heavy lettering, is one of the most common defects of offset printing. It seldom occurs on uncoated papers but it is a very serious source of complaints on coated stocks. The cause usually is too much pressure between the impression and blanket cylinders at the time of transfer of the image from the blanket to the paper. When a halftone shadow, or edge of a large solid, or block lettering is being printed on a smooth surface (like coated stock under excessive pressure), the ink provides sufficient lubrication for the blanket to slip slightly during the impression and the image is slurred in these areas.

You might ask, "Why do they need this excessive pressure? Surely they can't blame this on the paper." But they do. They say, "It doesn't happen on uncoated paper; so it must be the fault of the coated paper."

We have analyzed numerous cases of this problem exhaustively, and we have found that the trouble is not the coated paper but the lithographer's lack of experience in working with it. Prints made on coated paper from the same plates used on uncoated paper print more open in the shadows because a thinner film of ink is required

1. Research Manager, Lithographic Technical, Chicago, Ill.
Presented before a meeting of the American Pulp and Paper Mill Superintendents Association, Inc. in Chicago, Illinois, June 10, 1950.



# STEPS UP QUALITY AND DURABILITY OF PAPER PRODUCTS

# CORPOLIN®

## HYGROSCOPIC AND PLASTICIZING AGENT

CORPOLIN is a highly versatile and effective conditioner for paper. It has a marked softening effect, imparts flame-resistance and gives the paper a cloth-like feel and outstanding quality. It is extensively used for plasticizing paper draperies, bags, waxed and glassine containers, etc.

CORPOLIN is a heavy non-volatile liquid —clear, colorless, odorless, free-flowing It resembles glycerin in feel and appearance, and replaces it at less than ½ the cost. It is NON-TOXIC, NON-FLAMMABLE and does not solidify even in extreme cold. It introduces valuable economies as a humectant.

SHIPPED IN 600 LB. STEEL DRUMS AND 150 LB. CARBOYS.

*Write for technical data sheet*
*and samples today! They will go forward promptly.*


**THE AKTIVIN DIVISION**

**HEYDEN CHEMICAL CORPORATION**

393 SEVENTH AVENUE, NEW YORK 1, N. Y.

and there is less tendency for the dots to squash. The photographic negatives or positives used to make the plates should be changed to compensate for this difference in the printing characteristics of coated papers. Plants not making these compensations in the camera and on the plates try to do it on the press. By increasing the pressure between the impression and blanket cylinders or the amount of ink, the contrast in the shadows is improved temporarily because the slur produced enlarges the shadow dots. As the run progresses, however, the slur increases, transfers to the blanket and eventually to the plate. The shadows fill in excessively as the plate becomes sensitized and the pressman tries to offset this condition by adding more acid to the water fountain and running more solution on the plate. This practice not only ruins the plate prematurely but precipitates the other common troubles of misregister, slow ink drying, curl, and all the other troubles caused by excessive moisture on the press.

And so we see that the lithographer's failure to compensate in the camera for his use of coated stock on the press can produce a great succession of troubles which can be blamed on everything from the paper to the ink, or plate, or negatives. We can find no better example than this one to demonstrate how closely the lithographic process must be coordinated, and how interdependent each operation is on the other.

Certainly, slur is not a paper trouble, but we are going to have to contend with it as such until the lithographer learns how to handle coated stock. You can be sure that we are doing everything in our power to help him. The #16 issue of "Research Progress," our bimonthly publication, features an article on "Impression Slur" to make the lithographer aware of it and show him how he can eliminate it.

*Embossing:* The second trouble being experienced with the increased use of coated stock is the pulling or breaking of the sheet during printing so that the image areas appear embossed on the printed sheet. This trouble has been a common one with label manufacturers for years; but it is now spreading to other branches of lithography as more and more coated stock is being used.

Embossing can be due to three things: tacky inks, tacky blankets, and weak body stock in the paper. It happens particularly with coated stocks because these sheets are generally weaker than uncoated papers of the same weight. There is no excuse for tacky blankets; but lithographers must use tacky inks. If the job requirements are such that a thin sheet with weak body stock must be used, little can be done about embossing. It usually can be eliminated by using a heavier paper. Embossing then cannot be blamed on the paper. It is as much a limitation of the ink as it is of the lithographic process itself.

*Moisture Absorption:* Moisture absorption is the third of the troubles investigated recently on coated stock. On the most recent case, a sheet of coated stock would print successive colors satisfactorily on a single color press, but the second color would mottle when attempts were made to print the paper on a two-color press. The sheet had such low moisture absorption that the moisture picked up from the first impression did not soak into the sheet before making the second impression on the two-color press—so the printing mottled. When printed on a single color press, there was ample time for the moisture picked up to be absorbed before the next printing was made.

In lithographic printing, there is always bound to be some moisture on the blanket which transfers to the paper as well as the image. On a two-color press, the paper must absorb this moisture before the second impression is made. It has been our main object in lithographic research to develop ways and means of keeping the amount of water that transfers to the blanket down to an absolute minimum. The improved treatments and materials developed for plate-making help to make this possible.

Maybe, in the case in question, the lithographer was using a little more water than the absolute minimum, but the amount of water he was running did produce good results under normal conditions. As a matter of fact, he was able to run the paper by adding a slight amount of wetting agent to the fountain, making it possible to dampen the plate with less fountain solution and thereby transferring less to the blanket. While it worked in this instance adding wetting agent to the water fountain is considered very risky practice. A small amount will help sometimes; but too much will reduce the surface tension of the solution, causing all kinds of trouble with emulsification of the ink in the solution. The emulsification trouble we have when too much wetting agent is used in the fountain is similar to the trouble we have had with wetting agent in the sheet. We have found some lots of coated stock that had appreciable amounts of wetting agents in the coating which leached out during running and caused emulsification of the ink in the fountain solution. Why there should be so much free wetting agent in the sheet, we don't know; but we guess that the operator of the coater was having some trouble getting the coating to wet the base stock, and of course, surface active materials overcome this difficulty very nicely. While the wetting agent would never cause any trouble in letterpress, it is poison to lithography . . . another example of the strict demands the process makes on the paper.

Getting back to the case of the paper with the low moisture absorption, you will all admit that this trouble was certainly the fault of the paper. At least we diagnosed it as such. True, by juggling things around, the lithographer was able to make it work; but the papermaker should be able to supply the lithographer with paper that will have sufficient moisture absorption to print without mottling on two and even four-color presses.

So much for coated stock. We have run into two problems on uncoated stock which should be of interest to you. The first one is best described as wandering spots. The second trouble is offset or transferring of ink when sheets are handled in finishing, especially in the smasher preparatory to binding books.

Wandering spots are those that occur in printing and do not remain fixed but wander over the sheets. To cite a case in point, there seemed to be more of them on the felt side of the sheet than on the wire side. Careful examination of the sheet revealed the presence of rosin spots in the paper, caused probably by improper precipitation of the rosin size.

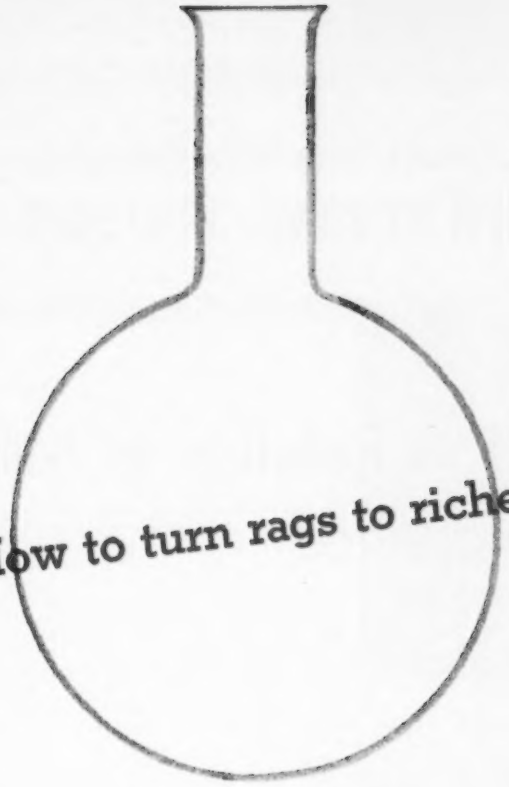
It is believed that wandering spots are connected in some way to rosin spots. It is possible that rosin spots could tranfer from the paper to the blanket, and then to the plate where they could take ink which then would transfer to the blanket and to the paper. The rosin spots do not stick to the plate but are removed easily. This characteristic would account for the movement of the spots. As certain spots disappear, new ones show up.

The number of spots can be kept down if the quantity of fountain solution run on the plate is increased, but this procedure is not recommended as good practice. It, therefore, is felt that this case of wandering spots was caused by the paper, and not by the process or anything the lithographer did.

*Offset:* Offset in the bindery and in finishing is a very serious problem. It is usually very expensive, because by the time it is discovered, it is too late to do anything about it—the job is all printed and cut.

There are two classes of this problem:
One class is called *scuffing* and occurs primarily on greeting cards. It is estimated that the greeting card industry spends over a million dollars each year erasing scuffing marks on cards. Scuffing is due to the rough textured stocks used on greeting cards; and is the transfer of ink from peak of printing to peak of unprinted paper. When sheets are rubbed over each other, or when pressure is exerted, the pressure is all at the peaks; and transfer occurs.

The other type of offset is experienced in book publishing when the folded and stitched signatures are subjected to the smashing operation. In every instance of this trouble investigated so far, the ink transferred from the wire side of the paper. We believe that this problem is closely related to scuffing and is a function of the two-sidedness of paper. The wire side is always rougher than the felt side; and



# How to turn rags to riches

More and more rag-paper mills boost production efficiency, improve paper quality... *increase profits*... with new, improved MERSIZE CD-2. In fact, *more than half* of the country's rag mills already profitably use this thermoplastic resin.

Mersize acts as a "booster," stabilizing sizing efficiency in hot weather, with improperly bleached pulp or poorly cooked rag stock. Then speeds production by:

1. Decreasing "broke" in tub sizing and coating.
2. Improving beater furnish efficiency through better fiber and filler retention.
3. Producing smoother mill operations.

In addition, Mersize increases resistance to ink and water penetration, reduces ink "feathering," and improves brightness and aging qualities of the sheet. Papermakers: bring Mersize's operational advantages (and extra profits) to your mill this summer, and the year around. Write today for full information, or clip the handy coupon below. Mersize: Reg. U. S. Pat. Off.

MONSANTO
CHEMICALS — PLASTICS

MONSANTO CHEMICAL COMPANY, Merrimac Div.
Desk PTJM 13, Boston 39, Mass.
Please send me information on Monsanto's new Mersize.
Name _____ Title _____
Firm _____
Address _____
City _____ Zone _____ State _____

SERVING INDUSTRY... WHICH SERVES MANKIND

this fact, combined with the fact that the ink may be properly adjusted and may not have dried hard, can account for the offsetting under pressure.

Who is to blame here? It could be the inkmaker; because, if the ink were properly formulated and dried hard, it shouldn't transfer. It could be the papermaker. Maybe there was too much difference in the roughness between the wire and felt sides. It could be the lithographer. Maybe he did not adjust the ink to the paper, and he may not have been too careful during running.

This problem has not existed to any great extent in the past. But as offset is being used for more book publishing, we can expect to see more and more of this problem. As long as the blame can't be pinned on any one faction, this problem should be studied very carefully and cooperatively by the lithographer, paper and ink manufacturers. It is possible that the solution may require a change in manufacturing or handling technique, on the part of all three participants.

Cooperative study and thinking is the best approach to the solution of any problem. It often is necessary to fix the blame for a trouble and many people have carried out investigations specifically for this purpose. I suppose this technique is important where settlements are involved. Think how much better it would be if, instead of trying to pin the blame on someone, we could find the real cause of a trouble and correct it so that we could be assured that it would not happen again.

Lithography can be a complicated process as can letterpress and gravure and no one has all the answers yet. The only way we are ever going to get close to these answers is by all of us—the lithographer, the ink manufacturer, and the papermaker—getting together and attacking our mutual problems cooperatively. We will get much further by working together than by blaming our troubles on one or on the other.

# Mill Painting and its Relation to Mill Maintenance

O. F. SHOBE[1]

The painting of pulp and paper manufacturing plants requires a variety of materials to successfully protect them against the conditions encountered. Moisture, acid and alkaline solutions, and bleaching gases are the principal chemicals which the painted surfaces must withstand.

Many of you will remember the experiment in elementary chemistry where a sheet of gold leaf suspended on a stick in a bottle of chlorine gas is completely corroded and disappears as a metallic sheet in a few minutes' time. The action of chlorine gas on steel is equally corrosive.

Sulphur dioxide gas in the presence of moisture is effective in its ability to stimulate rust formation. Calcium and sodium salts and alkaline solutions actively stimulate corrosion of iron and steel.

Fortunately, the paint industry today has a number of coating raw materials with chemical resistance properties unknown to the paint formulator only a few years ago. Techniques of successfully using some of the most resistant synthetic raw materials are a recent development not yet in general use.

## Surface Preparation

The first important thing involved in any successful paint job is to provide a properly prepared surface over which to apply the material. There is no known way to provide renewed adhesion to a wall surface covered with an old film that has poor adhesion, and shows peeling and checking tendencies, other than to remove the coating and to prime the original surface. Walls and ceilings which have been painted time and again with old style porous water-thinned paints often present such surface. In such cases, complete removal of the old paint is necessary if a satisfactory repaint job is to be obtained.

No paint job over a badly rusted steel surface will stop the further spread of corrosion under the new film. There are products widely advertised to do this job; but practical tests indicate that it is necessary to remove the corrosion to sound metal, and to reprime if a good job is required. Where proper surface preparation is an impossibility, coatings designed to penetrate through the old film have their place as a stopgap.

Sandblasting is by far the best known method of removing corrosion from structural steel and tankage prior to priming and finishing. This technique is particularly good on new construction where there is no danger of product contamination or of damage to equipment.

Mill scale removal is of great importance on new construction. Corrosion usually gets a start on new steel during fabrication; and, unless removed, it will continue spreading under the mill scale after painting.

Loose mill scale cannot be removed satisfactorily except by sandblasting or flame-cleaning. If the flame-cleaning is employed to do the work, thorough wire brushing should precede priming.

All surfaces prepared by sandblasting or flame-cleaning should be primed before new corrosion has a chance to start. Priming should be done the same day as the sandblasting or flame-cleaning.

In certain parts of a plant, where sand from sandblasting would contaminate the product or injure machinery, it is necessary to prepare the surfaces by wire brushing or by flame-cleaning. Chipping and scraping to loosen crusted rust should go hand-in-hand with mechanical wire brushing. A motor-driven wire brush often will fail to cut through crusted scales of rust unless some chipping is done to break up the corrosion. The proper use of phosphoric acid wash before priming steel cleaned in this manner appears to have some merit. Here again all surfaces cleaned during a day's work should be primed the same day to prevent new corrosion getting started. Anyone not familiar with flame-cleaning can secure details from The Linde Air Products Company.

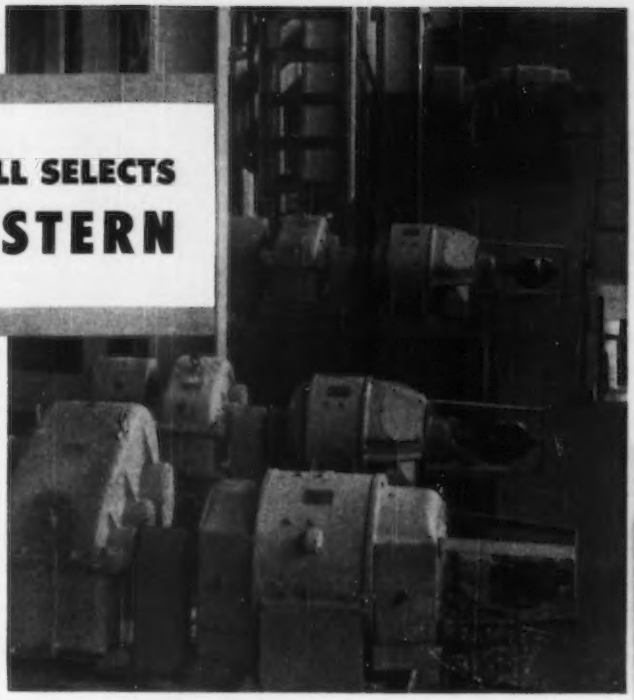
## Paint Systems for Paper Mills

### Wall Surfaces

The modern paper and pulp mill or any other industrial plant maintains the highest morale among its employees by a free use of color on walls and equipment. Pastel shades of proper color harmony not only guard against eye-strain and fatigue on the part of workmen, but also give good illumination. Low gloss on walls gives better diffusion of light. Also, where dull gloss finishes are applied, the walls are free from objectionable glare, and imperfections in surfaces are less prominent.

[1] The Glidden Co., Cleveland, Ohio.
Presented at the meeting of the American Pulp & Paper Mill Superintendents Association in Chicago, Ill., June 10th, 1930.

# ANOTHER NEW MILL SELECTS PACIFIC-WESTERN

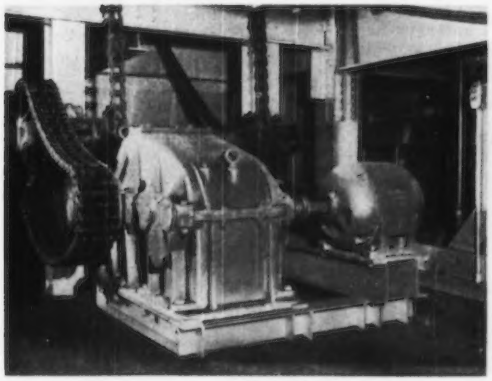


Pacific-Western speed reducers are shown in use on the General Electric sectional drive for the Black-Clawson paperboard machine at the new mill of Fibreboard Products, Inc., East Antioch, California. In the foreground a 50 h.p. motor is driving the first press through a Pacific-Western D-56 speed reducer with a reduction ratio of 15.5 to 1. Next two presses are driven by 20 h.p. motors through Pacific-Western D-52 speed reducers with the same reduction ratio. Eight other Pacific-Western speed reducers are also used in driving dryers, calenders, reel and cutter on the same machine. The Pusey and Jones paperboard machine is similarly driven by Pacific-Western reducers.

**WHEN FIBREBOARD PRODUCTS, INC.** recently constructed a new, multi-million dollar bleached kraft and nine point mill at East Antioch, California, skilled Pacific-Western application engineers were called in to provide the driving units. Efficient, precision-made Pacific-Western speed reducers were recommended for service on many operations throughout this mill, the only wood pulp mill in California.

More than fifty years of sound gearmaking experience are back of Pacific-Western's knowledge of the paper industry. For large mills and for smaller operations, Pacific-Western experts are ready to give your power transmission requirements immediate attention. Specify Pacific-Western and be sure.

The Pacific-Western DT-58 triple reduction speed reducer pictured below drives a log transfer section in the wood room. Carefully engineered for the various applications, Pacific-Western speed reducers are used on practically all power driven equipment in the plant.



WESTERN GEAR WORKS

Manufacturers of PACIFIC-WESTERN Gear Products

Pacific Gear & Tool Works

Plants at Seattle, San Francisco, Los Angeles

Representatives: Portland, Denver, Houston, Vancouver, B. C.

AGMA MEMBER

497

A wall and ceiling finish for certain departments of a pulp and paper mill must have excellent resistance to moisture and chemical penetration. Such a finish can be had by using a synthetic rubber type of emulsion paint. Available in a variety of colors, such a paint is applied easily by brush or spray gun on any wall or ceiling surface. The finish thus obtained gives a very high degree of resistance to moisture and paper mill chemicals. It also adheres well to all types of bare or previously painted wall surfaces; gives permanently flexible films; and may be washed repeatedly without harm.

This new type of wall coating, without doubt, is one of the major advances of the paint industry. Quite unaffected by the alkalinity of properly cured plaster and masonry surfaces, it makes the use of a zinc sulphate or other neutralizing treatment unnecessary, in fact, undesirable.

The performance of a nationally advertised brand of synthetic rubber emulsion paint has been so phenomenal that millions of gallons of the material have been produced and sold. So outstanding have been and are the results obtained with this paint that it is revolutionizing interior wall painting.

Obviously, such a coating would not be used on metal surfaces without the surfaces being primed previously with a suitable inhibitive primer.

A gloss finish usually is desired on plant dadoes. For this application, under severe conditions, a gloss Pliolite or chlorinated rubber enamel over the synthetic rubber emulsion paint sealer as an undercoat is highly satisfactory. The synthetic rubber base emulsion paint sealer may be applied to a wall not thoroughly dry from cleaning operations. Upon drying, the sealer will present a moisture-free surface for receiving the solvent type of gloss rubber enamels.

Gloss phenolic or alkyd enamels are also satisfactory for dado and trim coatings in any but the worst sections of the pulp mill. These enamels also may be used over synthetic rubber emulsion base paints as a sealer.

## Structural Steel and Equipment Surfaces

### Wall Cleaned or Sandblasted

As all operating people know, the first prerequisite in protecting steel against corrosion is to properly prepare the surface; the second, to apply a suitable inhibitive primer. Many steel surfaces in a paper and pulp mill do not present any particular maintenance problem. The wet areas of the mill, however, where screening, grinding, bleaching and the various processing chemicals are handled, are the areas that tax the corrosion engineer's ingenuity to maintain. The selection of the most successful painting system for such locations start with the priming coat.

Primers protect steel surfaces by mechanical means, and also act as an inhibitor against electrolytic action. Under adverse conditions, a high order of protection can be secured only by a careful selection of primer vehicle compounded with pigments of known inhibitive properties.

If the surface preparation is such as to leave no pitted corrosion or other surface contamination, a vinyl system will give an order of protection against corrosion, both mechanical and inhibitive, that is second to none. The vinyl metal conditioning primer, vinyl anticorrosive and vinyl finishing enamels built up to a film thickness of five mils will give years of protection against pulp mill corrosion.

Where a multiple coat vinyl system is out of the question, and the surface being painted is subjected normally to severe corrosive conditions, a coat of rust inhibitive vinyl metal conditioning primer, followed by a high quality tung oil phenolic resin primer, will give much improved performance than a coating of tung oil phenolic primer alone applied directly on a clean steel surface. This vinyl metal conditioning primer dries in 15 to 20 minutes so there is little or no delay in putting on the succeeding coat. It also is an excellent primer on galvanized iron, stainless steel and other metal surfaces.

The primer in this vinyl system requires a surface quite free from corrosion scales and pits. However, it will take care of surface rust staining from wet sandblasting, and will adhere over a surface not entirely free from moisture. Fortunately, most types of dissimilar primers and finishing materials give splendid adhesion over this vinyl metal conditioning primer, and it adds greatly to their effectiveness when used as the metal conditioning first coat.

Because of the chemical conditions encountered in a paper mill, mechanical as well as inhibitive protection against corrosion is of great importance. For mechanical protection, the metallic surface subjected to corrosive conditions is isolated with films highly resistant to the passage of moisture and chemicals.

A high order of resistance usually is accomplished by using a primer vehicle containing twenty-five to thirty-three gallons of tung oil to one hundred pounds of a suitable phenolic resin. Also the necessary inhibitive pigments should be incorporated in such a vehicle so as to passivate the metal surface and stop electrolytic action.

Such a primer should contain a liberal percentage of red lead and lesser amounts of zinc chromate and zinc oxide pigments, supplemented by a good grade of iron oxide and inert extenders. This type of primer will be high enough in oil content to produce a tough, hard film of excellent performance if used on a well cleaned surface.

Where the effort has been made to carefully prepare a surface, two heavy coats of such a primer will be found to add proportionately to the life of a paint system over a single application of primer prior to finishing.

## Structural Steel and Equipment Surfaces

### Corrosion Products Not Entirely Removed

There are times and circumstances in mill maintenance where, for one reason or another, the complete removal of rust is out of the question and it is necessary to do a paint job over such a surface. To this type of surface preparation, the vinyl system does not have application. If a tung oil, phenolic resin primer is used, it must carry an appreciable percentage of linseed or refined sardine oil to aid in wetting the corrosion and other minute surface particles and incorporate them as a component part of the primer film. Such a primer should contain twenty to thirty per cent of raw linseed or sardine oil in the vehicle to accomplish this wetting action.

Another way to treat this type of surface is to apply a mixture of raw drying oils containing a small amount of a finely ground inhibitive pigment and dehydrating solvent to the metal surface in a thin film. Then follow this oil coat in a few minutes with the tung oil, phenolic resin primer described for priming well cleaned surfaces.

The dehydrating and penetrating oil coat, when so used, will penetrate quite deeply into the corrosion remaining on the surface; the phenolic primer will form a highly resistant inhibitive coat over which to apply the finishing coats.

These methods of handling a metal surface to be painted do not compare favorably with the job on a well cleaned surface. However, they are a means of putting off the day when a better cleaning job can be done.

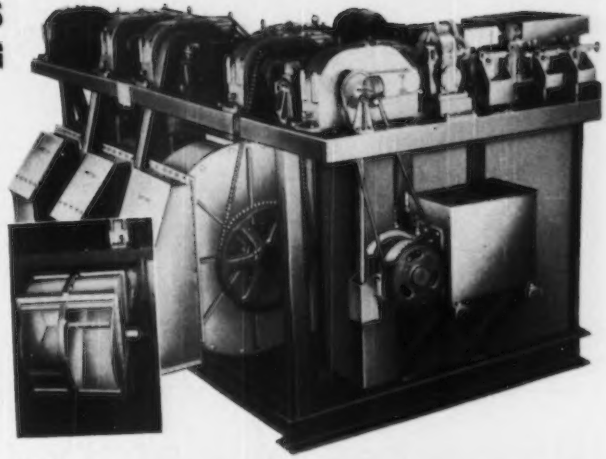
### Finishing Coats

For the wet areas of a pulp and paper mill, a solvent type of rubber resin enamel is known to perform well over such priming coats as have been described. A gloss Plinamel coating made from Goodyear resin has been observed to stand up for a year on a Fourdrinier where it is subjected constantly to moisture without any sign of deterioration, fading or peeling. Chlorinated rubber resin enamels have the same order of resistance to paper mill conditions.

Phenolic resin tung oil enamels of vehicle composition similar to the phenolic primer vehicle already described have splendid resistance to paper mill chemicals, but are probably not equal to the solvent type rubber resin enamels in the worst areas. All of these enamels, as well as the vinyl materials to which reference has been made, are to be had in a wide variety of pastel and deep colors for machinery and equipment. Therefore, the paint manufacturer should be asked to supply materials conforming to a standard color scheme that will present an attractive appearance as well as afford protection to the surface painted.

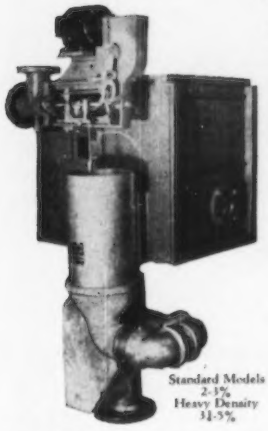
# TRIMBEY CONTINUOUS METERING & PROPORTIONING SYSTEMS

### SAVE IN FIRST COST, FLOOR SPACE, POWER AND MAINTENANCE



In a large number of paper mills, Trimbey Metering and Proportioning Systems are operating with great success in continuous, mechanically controlled proportioning, blending and metering of the complete paper furnish, replacing batch methods.
The rate of total output of the System can be adjusted instantly over a wide range without disturbing relative proportions of any of the ingredients. Without shutting down, proportions of any, or all, pulps or chemical ingredients can be individually changed to meet your requirements.
Totalizing counters record the volume of each pulp used during any given period, for cost accounting purposes. Specific designs are available to meet your individual mill requirements. These range from 10 to 400 tons per day for two or more Pulps, Color, Size, Clay Alum, etc.

# TRIMBEY CONSISTENCY REGULATORS



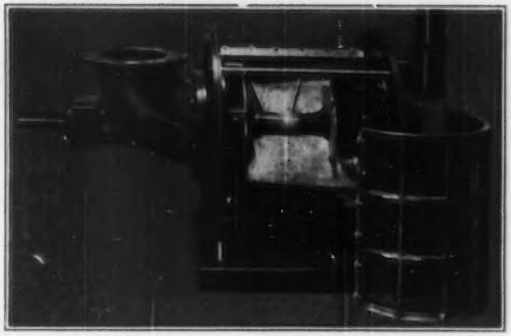
Standard Models 2-3% Heavy Density 3½-5%

*Centrifugal Pump Type*

These regulators automatically control pulp at densities from 2 to 5%, allowing a MAXIMUM variation of 1/10 of 1% consistency, plus or minus. They are sensitive to changes of consistency of 2/100 of 1%. The regulating action is automatic and is independent of the tonnage handled. The regulator is suitable for use with centrifugal pumps. The basic principle is a change in the friction head varying with changing consistencies, and controlling the amount of thinning water added at the suction side of the pump. This engages a fork-and-ratchet mechanism operating a motor-driven water valve. Special "Mixing Box" Type Consistency Regulators are available for use with either Centrifugal or Plunger Pumps.
For consistencies from 2 to 3%, the friction cylinder is 8" in diameter, with 2½ or 3" outlet, requiring a supply of 35 gallons per minute. For consistencies from 3¼ to 5%, a "Heavy Density" design with a friction cylinder 10" in diameter and a 4" outlet is used, requiring a supply of 75 gallons per minute.

# TRIMBEY MACHINE WORKS

**GLENS FALLS, N. Y.**



# TRIMBEY CENTRIFUGAL PULP SCREEN

Screening at HIGH CONSISTENCIES is allowed by this completely submerged type of Centrifugal Pulp Screen. It delivers the accepted stock at a point 2 feet above the center line of the screen. The rejects, which run from 5 to 12%, are raised 3 to 5 feet above the center line of the screen, permitting the Tailings Screens to be located at the same height as the Primary Screens and to be fed automatically without pumping.
The pulsating action of the screen automatically cleans the plates WITHOUT SHOWERS.
The large clearance and self-cleaning action reduce plate breakage and deliver CLEAN stock.

**TYPICAL SCREEN CAPACITIES PER 24 HOURS**

**USING 30-37 H.P. 420-475 R.P.M.**

| | Perf. | Tons |
|---|---|---|
| Sulphite | .055" | 20-30 |
| Ground Wood | .065" | 30-35 |
| Mixed Waste Papers | .110" | 50 |
| De-Inked Book Stock | .055" | 50 |
| Semi-Chemical Pulp | .045" | 50 |
| Soda | .050" | 75 |
| Kraft | .090" | 50-70 |
| Insulating Board | 3/16" | 50 |

In the long run, the painting of a pulp and paper mill can be done most cheaply by utilizing the highest quality materials that can be designed for the conditions. The cost of preparing the surface is so great that the paint cost for the job is a small part of the bill. A technically correct system of cleaning and painting for the conditions involved is likely to pay off by giving several times the service life of a poorly prepared surface painted with a badly formulated product.

Through cooperative effort, a competent paint manufacturer can develop finishes for painting different departments of a pulp and paper mill with performance characteristics that can be predicted accurately. Paint manufacturers are in constant touch with new developments of raw materials; and new ideas are evolving constantly for making better products for a given job.

It is appropriate to call to the attention of the superintendents and plant engineers present that every important and up-to-date company including the one I represent maintains a staff of skilled engineers available to be called in for consultation on all important industrial maintenance problems.

A complex painting system, such as is necessary for proper mill painting, must be studied with the relationship of one coat to another. Painting costs will be held to a minimum if the products of one manufacturer are used throughout a department or mill. This practice eliminates any possibility of a difference in compatibility, adhesion, toughness, etc., of one product as compared to another.

# Effect of Fibre-Size Distribution on the Properties of Hardboards Made from Fiberized Water-soaked Douglas-Fir

SIDNEY L. SCHWARTZ[1] and P. K. BAIRD[2]


## Abstract

*Pulp stocks produced by processing water-soaked Douglas-fir chips in an attrition mill consisted of fiber bundles, bruised individual and cut fibers, and disintegrated fibers or fines. As the power input in milling was increased, the amount of fiber bundles decreased and, in general, the fines and the drainage time of the stocks increased. The strongest hardboard produced from these stocks had a modulus of rupture of 6,500 pounds per square inch at a specific gravity of 1.0, but the stock from which it was prepared drained too slowly for commercial application. The production of acceptable-quality hardboard stocks without the use of resins or other additives was resolved into either of two procedures: (1) preparation of stocks at relatively low energy-consumption levels and removal of the coarse fractions for remilling, or (2) preparation of stocks at relatively high energy-consumption levels and removal of fines to improve drainage properties. The advantages of the first procedure outweigh those of the second because the remilling of the coarse fibers could provide means of limiting the amount of fines produced.*


1. Engineer, 2. Chemist, Forest Products Laboratory, Forest Service, U. S. Dept. of Agriculture, Maintained at Madison Wis. in cooperation with the University of Wisconsin.

Presented at a meeting of the American Pulp and Paper Mill Superintendents Association, Inc. in Chicago, Illinois, June 10, 1950.


## Summary

Forty-pound batches of water-soaked Douglas-fir chips were fiberized in an attrition mill under nine sets of conditions, and the stocks were evaluated for hardboard and test-sheet strengths, freeness, and fiber-length index.

These stocks were further evaluated by repeating the above tests on two fractions obtained by selective screenings: that retained on 16-mesh and that passing through 16-mesh wire. The fraction passing the 16-mesh wire was caught in an 80-mesh screen box. This procedure permitted the removal of a considerable amount of fines, as determined by subsequent screen analyses. The fibers retained on the 16-mesh wire were classed as coarse material, and those retained in the 80-mesh screen box were classed as intermediate material.

The results showed that the variation in the length of fibers of the stocks as prepared was in the order of one-hundred-fold. The fiber-size distribution had marked effects on the properties of the boards:

(1) The coarse fractions produced boards weak in flexural strength, which ranged from 2,400 to 4,700 pounds per square inch.

(2) The intermediate fractions, irrespective of the energy consumption in milling, produced hardboards ranging from 5,400 to 6,200 pounds per square inch in flexural strength for eight out of nine materials. In general, these fractions were much freer than the stocks from which they were obtained, and the boards produced from them were stronger than or comparable in flexural strength to those produced from their parent stocks. In all cases, however, some reduction in toughness occurred.

(3) Of the three classes of hardboard, those produced from the parent stock were the toughest, and those produced from the coarse stock the weakest.

(4) Irrespective of the stock class from which they were produced, hardboards were relatively tough when made from stocks produced with energy consumptions of about 40 horsepower-days per ton or more.

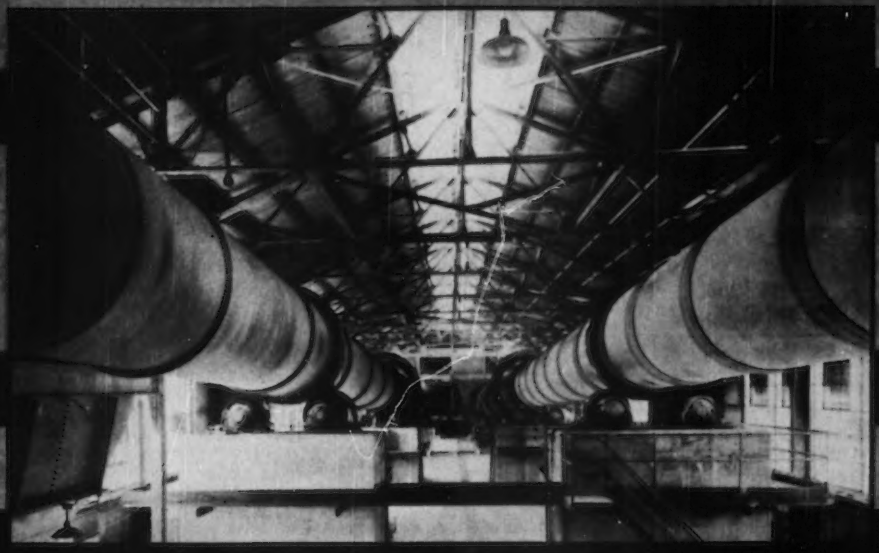
(5) Hardboards made from combinations of coarse and intermediate fractions decreased in flexural strength in proportion to the amount of coarse fibers added. Toughness values, however, reached a maximum when approximately equal proportions of each fraction were incorporated in the board furnishes.

(6) The amount of fines (material passing a 150-mesh screen) contained in a stock greatly affected the freeness of the stock.

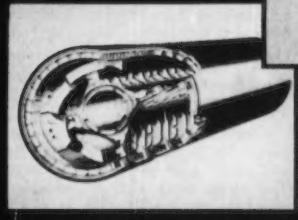
(7) The recovery (dimensional increase in thickness after wetting and redrying) was influenced by the ratio of the coarse fibers to fines.

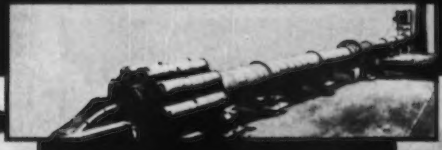
(8) The recovery of the coarse-fraction boards was from two to four times that of the boards made from

# UNAX ROTARY KILNS



HEAT EXCHANGERS





CHAIN SYSTEMS

## SAVE FUEL

The UNAX KILN operates with low fuel consumption, producing a product of high quality and uniformity.

The UNAX COOLER is integral with the kiln, providing efficient cooling by means of the air for combustion, which in turn is preheated to a high degree thus saving fuel in the kiln.

The Chain System in the wet kiln and the heat exchangers in the dry kiln provide additional substantial fuel savings.

If you are burning lime or lime sludge, etc., write for information to determine the savings possible in your fuel consumption, thus reducing your manufacturing costs.

## F. L. SMIDTH & CO.

11 WEST 42ND STREET — ENGINEERS AND MACHINERY MANUFACTURERS — NEW YORK, N. Y.

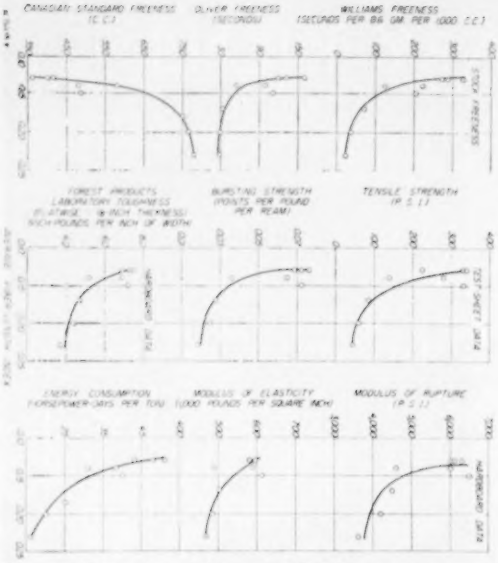

CANADIAN STANDARD FREENESS (C.S.)
OLIVER FREENESS (SECONDS)
WILLIAMS FREENESS (SECONDS PER 84 GM. PER 1000 C.C.)
FOREST PRODUCTS LABORATORY TOUGHNESS (LATHE 1/8 INCH THICKNESS) INCH-POUNDS PER INCH OF WIDTH
BURSTING STRENGTH (POINTS PER POUND PER REAM)
TENSILE STRENGTH (P.S.I.)
ENERGY CONSUMPTION (HORSEPOWER-DAYS PER TON)
MODULUS OF ELASTICITY (1000 POUNDS PER SQUARE INCH)
MODULUS OF RUPTURE (P.S.I.)

**Figure 1.—Relationship of the average fiber-length index to some properties of the parent fiberized Douglas-fir stocks and to hardboards prepared from them.**

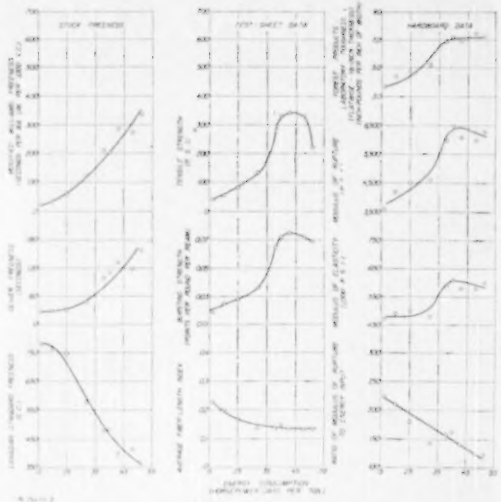


**Figure 3.—Relationship of energy consumption in milling to some properties of the parent fiberized Douglas-fir stocks and to the unsized hardboards prepared from them.**

the parent and from the intermediate-fraction stocks.

(9) The conditions of milling and fiber-size selection for optimum conditions of operation can be established from freeness and tensile-strength properties of test sheets made from a series of successive fiberizing experiments.

## Introduction

Past experience at the Forest Products Laboratory in preparing hardboard had indicated that an energy consumption in the range of 40 to 60 horsepower-days per ton would be required to obtain fiberized raw-wood stock suitable for the production of hardboard with a modulus of rupture of 6,000 pounds per square inch to meet class A requirements *(2)*.[2] This estimate was based on results obtained on stocks prepared at lower energy consumptions *(15, 17)* and on tests made on boards made from these materials. Furthermore, past results had indicated that stocks prepared at relatively high energy consumptions would drain too slowly for conventional board machines.

The slowness of stocks is greatly influenced by the amount of fines they contain, but the strength of test sheets prepared from the stocks is not *(1)*. On the other hand, coarse fibers prepared in an Asplund refiner are further processed in a stone-roll beater to make hardboard and insulating-board stocks *(5)*. Consequently, this study was undertaken to determine (1) the fiber-size distribution in stocks produced by processing in an attrition mill, and (2) the fiber-size-distribution requirements to obtain acceptable-quality hardboard stocks.

[2] Italicized figures in parentheses refer to literature cited at end of text.

**Figure 2.—Compression deformations in an attrition-milled Douglas-fir fiber as reviewed under polarized light. Magnification 650X.**

## Material

The wood used in these experiments was taken from the heartwood of an old-growth Douglas-fir log (shipment 2655, lot 2). The log contained incipient decay, but the chemical analysis and sulfate-pulping experiments disclosed but little if any degradation *(8)*.

## Equipment and Procedures

### Stock Preparation

Five-eighths-inch chips were prepared by means of a rotary chipper and were soaked in water overnight. The chips were drained, sampled for moisture content, placed in cans, and weighed. Batches weighing approximately 40 pounds (moisture-free basis) were fed to a 36-inch double-rotation disk refiner.

Nine milling runs were made, and the power input in each case was recorded. In order to obtain energy consumption above 25 horsepower-days per ton, it was necessary to pass the stock through the mill twice. In such cases the stock was pumped to a screen box, drained, and refed to the mill. The plate clearances in the refiner were varied to control the quality of the stocks and the power input.

The stocks obtained were then drained, pressed to a 25 to 30 percent moisture-free basis, broken up, and portions of them were sampled for moisture content. From those portions, hardboards and hand sheets were prepared, and freeness and screen-analysis tests were made.

These stocks were further evaluated

# PULP

# Perkins-Goodwin Co.

*Established 1846*

30 ROCKEFELLER PLAZA, NEW YORK

CHICAGO, ILLINOIS · LUFKIN, TEXAS · STOCKHOLM, SWEDEN

# PAPER

by repeating the above tests on two fractions: that passing a 16-mesh screen and that retained on a 16-mesh screen. A 10- by 12-inch single-plate diaphragm screen was used. The materials passing through the 16-mesh screen were caught in an 80-mesh screen box. Considerable amounts of fines were removed by avoiding an excessive accumulation of pulp in the screen box and permitting the effluents to impinge on the 80-mesh screen. Because of the removal of appreciable amounts of fines, these fractions were classed as intermediate materials, and the fractions retained on a 16-mesh screen were designated as coarse materials. Mill runs Nos. 753, 754 and 755 contained considerable amounts of relatively large slivers. Consequently, these coarse fractions were rescreened through an 8-mesh screen to obtain more suitable materials for board and hand-sheet evaluations.

Boards were made from mixtures of coarse and intermediate fractions of mill runs Nos. 755, 764, 769, and 781, in which the amounts of coarse fraction were varied from 25 to 75 percent. Freeness and test-sheet data were obtained on all mixtures.

### Hardboard Preparation

The wet unsized pulp mats for nominal ⅛-inch hardboards were formed in a pressure mold previously described *(15)*. Pulp sufficient for a series of boards was charged to a 30-gallon tank fitted with a quick-opening valve. A portion of the water was added, and the pulp was mixed with a high-speed propeller-type stirrer. The stock was then diluted to 1 percent consistency, and an aliquot portion was charged to the mold.

The wet mats removed from the mold were suitable for hot-pressing and conversion to hardboards. However, to facilitate operations and to prevent water from running over the hot press, the moisture content of the boards was reduced from about 70 to about 50 percent by cold-pressing at about 500 pounds per square inch.

The pressed mats were placed on 16-mesh galvanized-wire screens between copper cauls and pressed in a 14-inch by 14-inch, 125-ton press at a platen temperature of 190° C. To prevent the board from sticking to the top caul, the caul was lubricated with montan wax. The following three pressing periods were successively employed in most instances:

| Pressure P.s.i. | Time elapsed: During period Minutes | Time elapsed: Cumulative Minutes |
|---|---|---|
| 750 | 2 | 2 |
| 100 | 1 | 3 |
| 750 | 5 | 8 |

The pressing time in all cases was 8 minutes, but with extremely free pulps the period at a 100-pound pressure was omitted, and with extremely slow pulps this period was increased to 1½ minutes.

## Methods of Testing

### Freeness of Pulps

Three methods, the Oliver *(3, 15)*, a modified Williams, and the Canadian Standard freeness *(17)* tests, were employed in determining the drainage characteristics of the original stocks, but values from only the latter two were obtained on the various pulp fractions and mixtures.

*Modified Williams Freeness.* — A Williams precision-model freeness tester was employed. A charge of 8.6 grams, moisture-free basis, was used to simulate board-making procedures, and the test was conducted at a temperature of 20° ± 1° C.

### Pulp-sheet Tests

Pulp sheets of 340-pound ream weight were tested for bursting, tearing, and tensile strengths and for density according to TAPPI Standards.

### Screen Analysis

The procedure used was similar to that of Shafer and Heinig *(11)*. Duplicate runs with 50-gram samples, moisture-free basis, were made in a multiple-diaphragm plate screen. Since the multiple-plate machine was limited to four plates, it was necessary to make two determinations with different screens to expand the analysis of the original stocks. The screen plates used in one determination were of 16, 24, 42, and 80 mesh, and of 24, 80, 115 and 150 mesh in the other. For the pulp fractions that passed through a 16-mesh screen, the series of screens used in that screen analysis were 24, 42, 80 and 150. The coarse material that was retained on a 16-mesh screen was evaluated by means of the single-diaphragm plate screen *(13)*. For this material the amount passing through and the amount retained on an 8-mesh screen were determined.

The fiber-length index was calculated from the screen data. This index is the same as the "average screen opening" value reported by Schafer and Santaholma *(13)* and is the more recently accepted terminology.

### Hardboard Testing

Six hardboards were made from each of the parent stocks and were tested for flexural strength, modulus of elasticity, and dimensional stability. Four hardboards were made from each stock fraction and each mixture of fractions and were tested in the same manner. Each board furnished two static-bending specimens 6 by 1½ inches and two or more toughness specimens 4½ inches by ½ inch.

## TABLE I

TABLE I.—SCREEN ANALYSIS OF A VARIETY OF BOARD STOCKS PREPARED FROM FIBERIZED WATER-SOAKED DOUGLAS-FIR CHIPS

| Run No. | Milling data[1]: Plate setting 0.001 inch | Milling data[1]: No. of passes | Milling data[1]: Energy consumption[2] H.P.-days per ton | Average fiber-length index | Amount of pulp retained between screens: 4- to 8-mesh[3] Percent | 8- to 16-mesh Percent | 16- to 24-mesh Percent | 24- to 42-mesh Percent | 42- to 80-mesh Percent | 80- to 115-mesh Percent | 115- to 150-mesh Percent | Amount of pulp passing 150-mesh screen Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 753 | 10 | 1 | 16 | 0.23 | 35.6 | 10.2 | 5.0 | 14.4 | 13.4 | 3.4 | 3.4 | 14.6 |
| 754 | 5 | 1 | 20 | .20 | 23.4 | 14.4 | 5.4 | 16.0 | 15.2 | 4.4 | 3.6 | 17.6 |
| 755 | 2.5 | 1 | 25 | .17 | 13.3 | 15.3 | 7.0 | 17.0 | 16.4 | 5.6 | 4.2 | 21.2 |
| 781 | 20 | | | | | | | | | | | |
| | 10 | 2 | 32 | .14 | 7.7 | 14.2 | 6.7 | 17.7 | 15.1 | 7.6 | 6.0 | 25.0 |
| 775 | 10 | | | | | | | | | | | |
| | 8 | 2 | 38 | .14 | 6.0 | 17.7 | 5.8 | 15.8 | 15.7 | 5.3 | 5.9 | 27.8 |
| 772 | 10 | | | | | | | | | | | |
| | 6 | 2 | 40 | .15 | 3.4 | 23.2 | 5.2 | 14.8 | 14.8 | 6.0 | 7.4 | 25.2 |
| 769 | 6 | | | | | | | | | | | |
| | 5 | 2 | 43 | .13 | 2.0 | 16.0 | 5.8 | 18.2 | 16.8 | 5.2 | 6.2 | 29.8 |
| 765 | 2.5 | | | | | | | | | | | |
| | 2.5 | 2 | 48 | .13 | .2 | 19.4 | 4.4 | 17.0 | 16.6 | 5.4 | 5.4 | 31.6 |
| 764 | 2.5 | | | | | | | | | | | |
| | 0 | 2 | 51 | .13 | 0 | 17.6 | 4.6 | 17.6 | 15.0 | 5.8 | 6.6 | 29.4 |

[1] B—957 plates used. Mill run in the counter-clockwise or lay-ling direction.
[2] Based on weight of oven-dry material charged and 85 per cent of the power input to the mill.
[3] In calculating the average fiber-length indexes it was assumed that all of this fraction would pass a 4-mesh screen.

# VORTRAPS

FOR

## CLEANING ANY PAPER STOCKS OR CHEMICAL SLURRIES

8" AND 10" VORTRAPS for cleaning waste paper stock for paper board mills and de-inking plants. Readily adaptable for special uses.

***Removes Foreign Matter By The Tons***

10" PRIMARY AND 4" SECONDARY VORTRAPS for cleaning large volumes of stock with a minimum of power consumption. Used in pulp mills and recommended for large machines.

8" AND 10" VORTRAPS WITH WASTE RECEIVER

4" VORTRAP

4" AND 3" VORTRAPS for cleaning fine paper stocks, screen tailings, slurries, cooking liquors and water.

3" VORTRAP

1½" VORTRAP

1½" AND 3" VORTRAPS for chemical slurries, pigments and laboratory applications.

8" AND 10" VORTRAPS WITH AUTOMATIC REJECTS VALVE

Other NICHOLS Products for the Paper Industry:

Monohearth Bark Burning Furnace for Disposal of Wet Bark

Ore Roasters for the Production of $SO_2$ Gas

Waste Disposal Incinerators and other Furnace Applications

VORTRAPS

Available in many standard sizes to give efficient and economical dirt removal service. There are more Vortraps in more mills than any other type of similar equipment

Write for Bulletin No. 219-J

**NICHOLS ENGINEERING & RESEARCH CORPORATION**

**70 Pine Street—New York 5, N. Y.**

**40 So. Los Robles Ave. Pasadena 1, Calif.—1477 Sherbrooke St., W. Montreal 25, Canada**

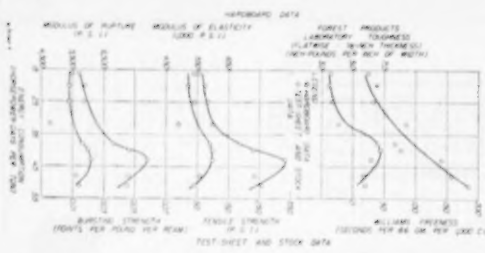


Figure 4.—Relationship of the energy consumption in milling to some properties of the intermediate-fraction unsized hardboards, test sheets, and stocks.

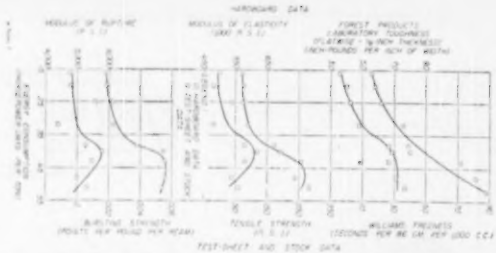


Figure 5.—Relationship of the energy consumption in milling to some properties of unsized hardboards, test sheets, and stocks containing 75 percent intermediate and 25 percent coarse-fraction fibers.

The static-bending specimens were tested on a 120-pound range of the hydraulic capsule, with the load being applied through the use of a mechanical testing machine. In test, each specimen was supported on roller bearings placed on knife-edged props that were set to a span of 4½ inches. The load was applied midspan on the smooth surface with a curved maple loading block, the radius of which was ¼ inch. The rate of loading was 0.09 inch per minute. The deflection was measured at the center of the bottom of the specimen by means of an indicating dial that measured to the nearest 0.001 inch. Deflections were read at various increments of load, according to the strength of the material.

Toughness specimens were tested on the Forest Products Laboratory intermediate-capacity toughness-testing machine. This machine, originally designed for testing wood, is of a pendulum type and, as adapted for these tests, measures the energy required to break a ⅛- by ½- by 4½-inch unnotched specimen on a span of 2½ inches. Adjustments for variations in thickness were made on the assumption that the toughness varies as the square of the thickness.

The flexural-strength-test samples from four boards of each stock evaluated were selected for dimensional-stability determinations. The samples were divided into two groups; one for exposure to 97 percent relative humidity and one for water-soaking. Each board selected provided a sample for each procedure. These samples were conditioned for 24 hours or more in an oven maintained at a temperature of 50° C. At the end of the conditioning period the samples were cooled in a desiccator, weighed, and measured for thickness and height at marked areas. One group of samples was then submerged for 21 days under 1 inch of distilled water maintained at a temperature of 70° ± 5° F. The other group was placed in an atmosphere maintained at 97 percent relative humidity and at a temperature of 80° F. for 32 days. Data on changes in weight and dimensions were taken. The water-soaked samples were wiped with a damp cloth to remove excess surface water before being weighed and measured. The test samples were air-dried and were then oven-dried at a temperature of 50° C. for 24 hours or more and were then cooled in a desiccator, after which the deviations from the original conditioned weights and measurements were noted.

The increase in thickness of the samples in the wet and of those in the moist condition was designated and reported as "swelling and recovery." The increase in thickness in the redried samples over the original conditioned samples was designated as "recovery."

## Discussion of Results

The specific gravity of most of the hardboards prepared, irrespective of the type of stock, was within a range of 0.95 to 1.12, and the modulus of rupture varied from 2,170 to 8,860 pounds per square inch. Adjusted to a specific gravity of 1.0 *(17)*, the average modulus of rupture of the boards obtained from the various stocks ranged from 2,400 to 6,500 pounds per square inch.

The modulus-of-elasticity values were also adjusted to a specific gravity of 1.0. It was assumed that the stiffness of the boards varied as the 1.5 power of the specific gravity and not as the 2.0 power, as in the case of the flexural strength *(17)*. The adjustment assumed is the result of due consideration given variations observed in wood *(7)* and fiberboards *(17)*.

The sheets made from the various stocks were considerably lower in bursting and tensile strengths than those of newsprint grade of groundwood *(13)*. From data given by Clark *(1)* the sheet strengths were adjusted to a density of 0.3 gram per cubic centimeter.

### Parent Stocks

*Fiber-length Index.*—Screen-analysis data *(6)* obtained on a wide variety of insulating and hardboard stocks showed that between 17 and 25 percent of the material passed through a 100-mesh screen and from 12 to 20 percent passed through a 200-mesh screen. In this study fiberizing water-soaked Douglas-fir chips with an energy consumption in milling as low as 16 horsepower-days per ton produced 15 percent of fines passing through a 150-mesh screen. As shown in table 1, 21 to 42 percent of the stocks as prepared would pass through an 80-mesh screen. The energy consumption in milling ranged from 16 to 51 horsepower-days per ton.

The average fiber-length indexes calculated from the screen analyses data (table 1) varied from 0.23 to 0.13. Based on the analysis of the work of others *(13, 10)* at the Forest Products Laboratory, the average fiber lengths in millimeters of these pulps were judged to be approximately three times the average fiber-length index. Although the variation in length of the fibers in these stocks was in the order of at least one-hundred-fold, the average fiber lengths of the different stocks were thus estimated to range between 0.7 and 0.4 millimeter.

The data obtained on the properties of the stocks and boards were plotted against the fiber-length index as shown in figure 1. A number of asymptotic curves were obtained. A marked drop in freeness and a marked increase in drainage rate accompany the drop in fiber-length index. It could be con-

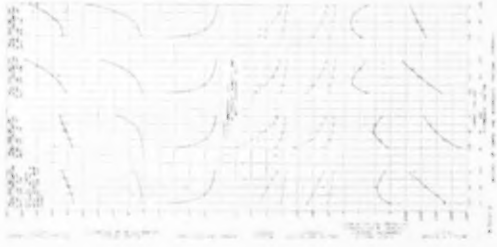


Figure 6.—Properties of stocks from mixtures of coarse and intermediate fractions and of the hardboards made from them.

WHEN SEEKING THE SOLUTION
TO A WATER CONDITIONING PROBLEM
*Remember*
*There's no substitute for Experience!*

# COCHRANE

## SLUDGE CONTACT REACTORS

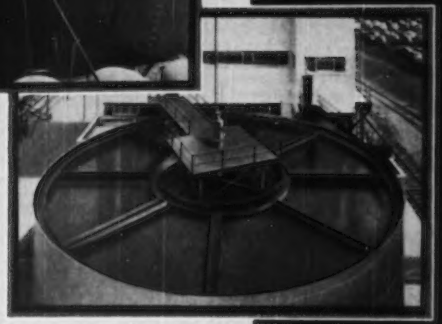
**For the Clarification of Water and the Recovery of Waste in Process**

Clarifies water by use of sludge contact principle.

Raw water and chemicals enter near the bottom of the tank. Motor driven agitator mixes them thoroughly forming floc or precipitate. The agitator also keeps the floc or sludge suspended, so that the water is both treated and filtered by the sludge bed or blanket as it rises in the tank.

COCHRANE's specialization in the conditioning of industrial water supplies over the past fifty years and the combined years of experience of Cochrane engineers in that field, is your assurance of satisfactory service from any Cochrane installation. In the new method of sludge contact or removal by flocculation of impurities, turbidity, color or hardness, the Cochrane Sludge Contact Reactor accomplishes all these functions with complete efficiency and surprising economy. A new bulletin, Publication 5001, is available and will be sent on request.

The inclined blades of the agitator cause water and sludge to be deflected to the center where the mixture rises through the central port and is then recirculated back to the bottom, saving chemicals and producing a heavier floc. Central steel baffles divide the Reactor into a mixing zone at the bottom and a clarifying zone at the top.



**COCHRANE CORPORATION**

**17th St. Below Allegheny Ave.**
**Philadelphia 32, Pa.**

*In Canada:* Canadian General Electric Company, Ltd., Toronto
*In Mexico:* Babcock & Wilcox de Mexico, S.A., Mexico City

cluded that test-sheet strengths (bursting and tensile) and moduli of rupture and elasticity in bending and toughness of the hardboards increased with a decrease in fiber-length index. This method of evaluation emphasizes the changes brought about by cutting the fibers, but it does not entirely reflect changes due to fibrillation *(1)* and compression deformation of the fibers or of their cut fractions.

Compression deformations (fractures due to bending the fibers beyond their elastic limit) were detected in these fibers under a microscope using polarized light. A quantitative evaluation of the extent of deformation by direct means appears to present insurmountable difficulties. Such deformations in the fibers, as shown in figure *2*, were, however, observed with appreciable frequencies.

*Relation of energy consumption in milling to hardboard and stock properties.*—A better evaluation was obtained by plotting the stock and hardboard properties against energy consumption in milling as shown in figure 3. The following information was obtained:

(1) The efficacy of the attrition-mill processing for developing flexural strength in hardboards decreased with increased energy consumption. The decrease in the ratio of flexural strength to energy consumption was proportional to the increase in energy consumption.

(2) The moduli of rupture and elasticity in bending and the toughness of the hardboards reach maximum values or level off at 40 horsepower-days per ton. The values obtained were 6,500 and 610,000 pounds per square inch, and 6.9 inch-pounds per inch of width, respectively.

(3) The maximum bursting and tensile strengths of the hand sheets reached maximum values at 43 horsepower-days per ton.

(4) The skewness of the bursting and of the tensile strength curves is similar to that of the flexural properties, and to a degree is similar to that of the toughness curve, and it specifically reflects the degree and trend of processing.

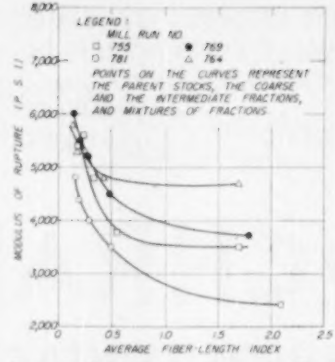



**Figure 7.—Relationship of the average fiber-length index to the flexural strength of unsized hardboards prepared from fiberized water-soaked Douglas-fir chips.**

(5) Commercial hardboard practice requires extremely free stocks *(5)*. In respect to freeness, commercial hardboard stocks compare favorably with free insulating-board stocks *(3, 4)*, and on that basis these stocks are, in general, too slow for commercial operation.

(6) Maximum-strength board stocks prepared in the manner described greatly exceeded the freeness limitation for board stocks for conventional machine operation.

#### Intermediate-fraction Stocks

*Fiber-length Index.* — The average fiber-length indexes of the intermediate-fraction stocks varied from 0.21 to 0.13, a range of values that differed but little from the corresponding parent stocks. Some of the intermediate fractions had indexes that exceeded those of their parent stocks. The loss of fines, which ranged from 12 to 28 percent of the original material, compensated for the removal of long fibers; consequently there was but little change in the indexes. Data are shown in table *2*.

Strong hardboards ranging from 5,400 to 6,200 pounds per square inch in flexural strength were prepared from 8 out of 9 of these fractions, irrespective of the fiber-index value or of the energy consumption in milling. The stocks were relatively free, being in most instances markedly freer than their parent stocks. In all cases, however, some reduction in toughness occurred.

*Relation of energy consumption in milling to hardboard and stock properties.*—It would be difficult to ascertain the amount of energy consumed in the production of these intermediate fractions. Nevertheless, a relationship of the total energy consumption of the parent stocks to the hardboards and stock properties of the fractions was found to exist. From the data plotted in figure 4, it was ascertained that the flexural strength, the stiffness, and the toughness of the boards, and the bursting and tensile strengths of the pulp test sheets reached maximum values at 40 to 43 horsepower-days per ton. The similarities in skewness of the curves of the above properties reflected the degree and trend of processing, and the relationships between board and sheet properties.

#### Coarse-fraction Stocks

*Fiber-length Index.* — The average fiber-length indexes of the coarse-fraction stocks varied from 2.1 to 1.7 and were approximately 10 times those of their parent stocks. These pulps were extremely free; the modified-Williams-test values were from 5 to 11 seconds. The hardboards made from them were relatively weak in flexural strength, which ranged from 2,400 to 4,700 pounds per square inch. Those made at the higher energy-consumption levels were, however, relatively tough.

The pulps of this group represented portions amounting to 10 to 27 percent of the parent stocks. Pulps obtained from mill runs Nos. 753, 754, and 755 contained considerable amounts of very coarse material. Consequently they were rescreened, and only those portions passing an 8-mesh screen and retained on a 16-mesh screen were used. The other pulps of this group contained from 0 to 7.7 percent that could be retained on an 8-mesh screen. No correlation of fiber-length index and energy consumption with board and test-sheet properties was noted. In general, however, the board and test-sheet strengths were higher at the higher energy consumptions.

#### Mixtures of 75 Percent Intermediate and 75 Percent Coarse Pulp Fractions

*Fiber-size Index.*—Mixtures containing 75 percent intermediate and 25 percent coarse fiber fractions were prepared from each mill run. The average fiber-length indexes of these mix-

## TABLE II

TABLE II.—SCREEN ANALYSIS OF THE INTERMEDIATE FRACTIONS SELECTED FROM THE PARENT STOCKS BY SCREENING THROUGH A 16-MESH SCREEN AND RETAINING ON AN 80-MESH SCREEN[1]

| Mill Run No. | Estimated proportion of parent stock before screening | Estimated proportion of this stock removed in screening (Fine passing 150-mesh) | Average fiber length index | Amount of pulp retained between screens | | | | Amount of pulp passing 150-mesh screen |
|---|---|---|---|---|---|---|---|---|
| | | | | 16- to 24-mesh | 24- to 42-mesh | 42- to 80-mesh | 80- to 150-mesh | |
| | Percent | Percent | | Percent | Percent | Percent | Percent | Percent |
| 753 | 54 | 17 | 0.21 | 17.2 | 30.2 | 26.3 | 15.8 | 10.6 |
| 754 | 62 | 16 | .19 | 8.6 | 29.8 | 31.6 | 18.0 | 12.0 |
| 755 | 71 | 18 | .18 | 13.0 | 27.2 | 29.4 | 18.2 | 12.2 |
| 781 | 78 | 12 | .15 | 9.8 | 30.5 | 20.2 | 19.4 | 20.1 |
| 775 | 76 | 24 | .19 | 18.2 | 26.4 | 24.8 | 18.4 | 12.2 |
| 772 | 73 | 21 | .18 | 13.3 | 31.0 | 24.2 | 18.4 | 13.1 |
| 769 | 82 | 17 | .15 | 12.4 | 24.2 | 24.6 | 19.3 | 19.0 |
| 765 | 80 | 19 | .14 | 8.4 | 23.6 | 26.6 | 21.0 | 20.4 |
| 764 | 82 | 13 | .13 | 3.8 | 21.6 | 28.6 | 23.4 | 22.6 |

[1] Effluent passing through the 16-mesh screen was allowed to impinge on the 80-mesh wire and appreciable quantities of stock were not allowed to build up in the screen box. Consequently, some fines were removed from this fraction.

Blandin Paper Company Mill at Grand Rapids, Minnesota.

Mr. C. K. Andrews, General Manager, Blandin Paper Company.

Making up the "Solozone" Sodium Peroxide bleaching solution.

# Blandin reports increased brightness, lower cost, trouble-free operation WITH THE DU PONT PEROXIDE PROCESS FOR GROUNDWOOD BLEACHING

Originally a newsprint mill, the Blandin Paper Company now manufactures only groundwood printing papers largely used in magazine publishing.

*Mr. C. K. Andrews, General Manager of Blandin, says:*

**"Since March 1948, we have been peroxide bleaching groundwood with very good results. Average brightness has increased 9 points, somewhat better than predicted. Use of bleached groundwood in our paper furnish has improved the opacity.**

**"We operate at about 15% of consistency. At this consistency we believe we receive higher brightness and faster bleaching, using less chemicals than at lower consistency, and have trouble-free operation.**

**"Advantages of this system are simplicity of operation, elimination of washing of the product. It appears more practical on groundwood pulp than other methods of bleaching."**

Furthermore, Blandin has found that the yields obtained in this process are between 98 and 100% . . . that although bleaching groundwood does not eliminate fading, it does retard it . . . and that the reaction to bleached groundwood in their grades, from the printing industry, is favorable, due to the improvement in color and cleanliness.

*Tune in to Du Pont "CAVALCADE OF AMERICA" Tuesday Nights—NBC, coast to coast*

**Experience has shown** that peroxide bleaching is not limited to groundwood. It can be adapted to soda, sulfite, semi-chemical, and kraft pulps and for waste-paper recovery. Technical service and assistance in specific applications are available upon request. For more information about Du Pont peroxides and the Du Pont bleaching process, just fill in and mail the coupon below.

## Mail this coupon now

**DU PONT**
**PEROXIDES**
*FOR GROUNDWOOD BLEACHING*

AVAILABLE IN DRUMS AND TANK CARS
"Albone" 35 . . . . . Hydrogen Peroxide, 35%
"Albone" 50 . . . . . Hydrogen Peroxide, 50%
"Solozone" . . . . . Sodium Peroxide

DU PONT

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Dept., Wilmington 98, Delaware

Please send me further information about Du Pont peroxide bleaching processes: (check application)

____Groundwood ____Sulfite ____Soda Pulp ____Kraft
____Semi-chemical pulps ____Waste-paper recovery

*Name*_____
*Position*_____
*Firm*_____
*Address*_____

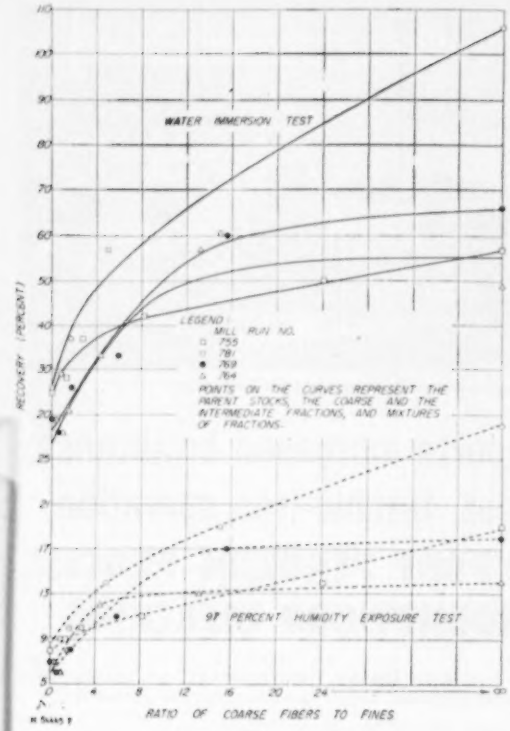



Figure 8.—The relationship of the drainage time of several board stocks to the amount of fines in the stocks.

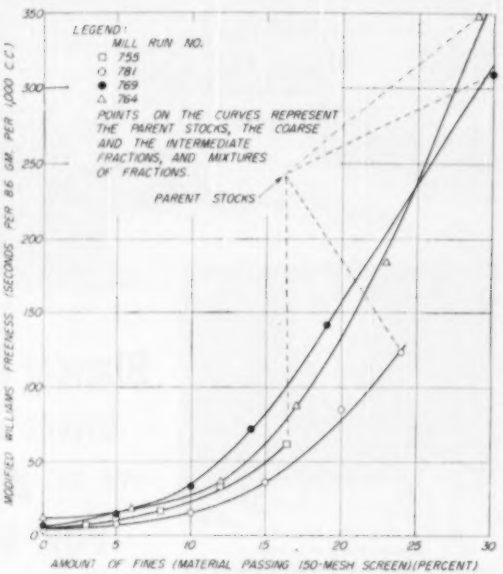

LEGEND:
MILL RUN NO.
755
781
769
764
POINTS ON THE CURVES REPRESENT THE PARENT STOCKS, THE COARSE AND THE INTERMEDIATE FRACTIONS, AND MIXTURES OF FRACTIONS.
PARENT STOCKS
MODIFIED WILLIAMS FREENESS (SECONDS PER 80 GM. PER 1,000 C.C.)
AMOUNT OF FINES (MATERIAL PASSING 150-MESH SCREEN) (PERCENT)

Figure 9.—The relationship of the recovery of unsized Douglas-fir hardboards to the ratio of the amount of coarse fibers to the amount of fines in the boards.

tures ranged from 0.17 to 0.26. These composite stocks represented from 40 to 88 percent of the corresponding parent stocks. These stocks drained freely, and the modified-Williams-freeness values ranged from 16 to 88 seconds. Hardboards made from these stocks had flexural strengths ranging from 4,400 to 5,800 pounds per square inch. In most instances these values were 3 to 13 percent less than those obtained from the corresponding intermediate-fraction boards. However, no correlation of average fiber-length index to hardboard and test-sheet strengths and to freeness was found.

*Relation of energy consumption in milling to hardboard and stock properties of mixtures.*—As shown in figure 5, a similar relationship of energy consumption to board and sheet properties that was obtained for the parent was noted for compounded stocks. The maximum flexural strength of the hardboards was reached at 40 horsepower-days per ton, maximum toughness at 48 horsepower-days per ton, and the maximum Bursting and tensile strengths of the test sheets at 43 to 45 horsepower-days per ton. The relationship between board and sheet strengths was reflected in the similarity of the shape of the curves.

### Effects of Fiber-size Distribution on Hardboard and Stock Properties of Four Specific Mill Runs

Stocks from four mill runs, namely, Nos. 755, 781, 769, and 764, with energy consumption of 25, 32, 43, and 51 horsepower-days per ton, respectively, were selected for a study on mixtures containing 50 and 75 percent coarse fibers.

*Fiber-length Index.* — The average fiber-length indexes of the pulp used in these mixtures ranged from 0.13 to 2.1 and covered the entire range of values encountered in this work. The indexes of the mixtures were calculated from the following formula:

$$z = \frac{1}{\frac{R}{x} + \frac{S}{y}}$$

where z = average fiber-length index of the mixture
x = average fiber-length index of one component
y = average fiber-length index of the other component
R = the percentage of the x component
S = the percentage of the y component

The formula was derived from an analysis of the procedure for the determination of the average fiber-length index *(13)* and holds for all cases in which the mesh of the terminal, or last-used, screen is of the same size.

The hardboards made from combinations of coarse and intermediate fractions decreased in flexural strength in proportion to the amount of coarse fibers added, as shown in figure 6. The stock and sheet properties of the various mixtures were commensurable with the proportions of coarse and intermediate fractions.

The flexural strength plotted against average fiber-length index, as shown in figure 7, decreases as the index value increases for a given milling; however, the degree of milling or fibrillation cannot be ascertained from the index values.

### The Influence of Fines

The freeness of the stocks was greatly influenced by the amount of fines, consisting of material passing through the 150-mesh screen, as shown in figure 8. This effect was independent of the amount of coarse fiber in the stock, the parent stocks were not as free as the corresponding intermediate stocks that were devoid of the coarse fraction.

The strengths of the intermediate stocks were not influenced by the amount of fines retained. In cases where the parent-stock boards exceeded their corresponding intermediate-fraction boards in flexural strength, the difference in strength can be attributed to the bonding effect on the coarse fraction of the fines having large surface area.

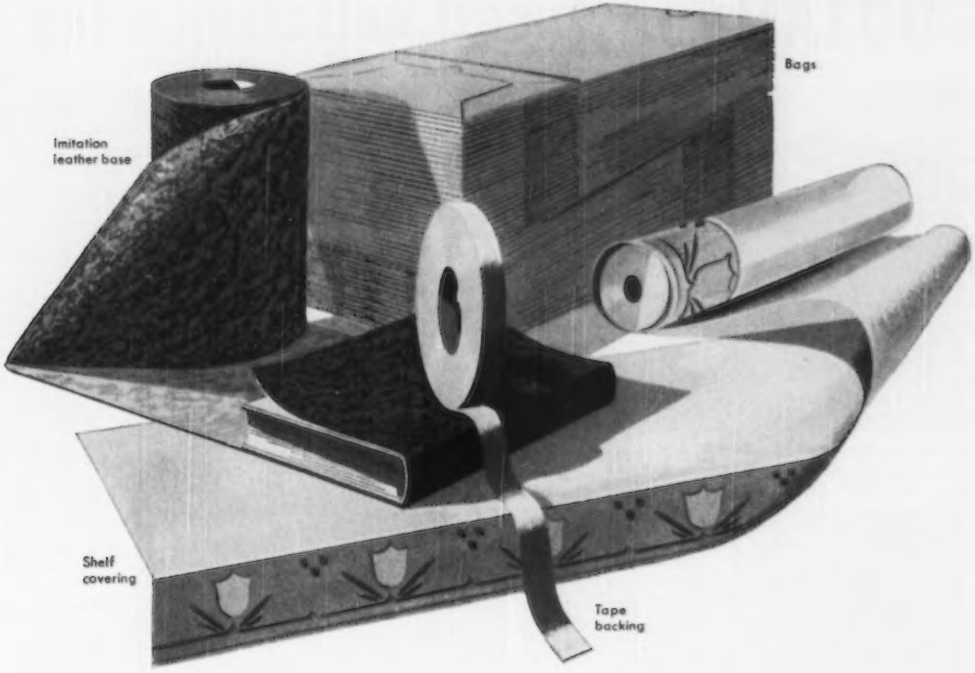
### Dimensional Stability

Two types of dimension-stability tests were made; one, immersion in water, which was the more drastic, and the other, exposure to an atmos-

*News about*

# B. F. Goodrich Chemical Company

***raw materials***




Let Hycar show you

## NEW PROFITS IN PAPER!

IF you're looking for improvements—and new profits—with paper, just see what Hycar latex can do for you.

Impregnated with Hycar, paper becomes softer and stronger, makes smooth-draping sheets. It has improved tear and wet strength, oil resistance, cloth-like feel.

And Hycar is easy and economical to use. It may be added to paper before or after sheet formation. It's safe, too—no vulcanization or explosive solvents are required. No costly recovery systems are needed.

There's a whole list of profitable uses for Hycar-improved paper—protective wrapping, bags, shelf covering, gasketing, tape backing, imitation leather base and more.

Highly versatile, Hycar latex has other uses. For example, modifying other resins in coating or impregnating applications; for making phenolics tough rather than brittle. It is non-migrating and non-volatile, ideal for permanently plasticizing vinyl resins. And Hycar-based adhesives can permanently bond paper, wood, leather, aluminum foil and vinyl films to themselves as well as to other materials.

Find out how Hycar latex can help you improve your paper, paper products, *and* your profits. Send for technical bulletins. Please address Dept. HJ-7, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, O.

**B. F. Goodrich Chemical Company**
**A Division of The B. F. Goodrich Company**

**Hycar**
Reg. U. S. Pat. Off.
American Rubber

**GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers**

phere at 97 percent relative humidity and at a temperature of 80° F. The tests gave corroborating results. The ratios of the average dimensional changes for the immersion test to the average dimensional changes for the exposure test at 97 percent humidity were:

| | *After wetting* | *After redrying* |
|---|---|---|
| Linear changes | 1.4 | 1.7 |
| Thickness changes | 2.2 | 3.3 |

The dimensional changes were of approximately the same magnitude for the corresponding parent- and intermediate-stock boards. The recovery in the corresponding coarse-fraction boards was approximately 2 to 4 times that of the parent-stock boards. The water-soaked coarse-fraction specimens had recovery values from 49 to 106 percent. These redried test specimens had the appearance of quarter board. In general, the linear expansion of the coarse-fraction boards was slightly higher than that of the others, but they shrank less on drying. Water-soaking produced the greatest linear expansion, for which the largest value obtained was 1.3 percent.

The dimensional changes of the boards made the mixtures of coarse and intermediate fractions were found to be dependent on the proportions of the pulp fractions, as shown in figure 5.

The dimensional changes in thickness were adjusted to a specific gravity of 1.0 in accordance with data obtained by Ogland *(9)* that showed that at these density levels the thickness changes vary directly with specific gravity. Ogland *(9)* found that the linear dimensional changes of hardboards were not influenced by the density; therefore these changes were not adjusted.

The bonding action of the fines (material passing a 150-mesh screen) on the swelling and recovery of the hardboards was noted. As shown in figure 9, the recovery of the boards of mill runs Nos. 755, 781, 769, and 764 was influenced by the ratio of coarse fibers to fines and not by the amount of fines.

## Conclusions

It has been found that the efficiency of the attrition mill in processing for the development of flexural strength in hardboards decreased with increased energy consumption. This decrease, as indicated by the ratio of the flexural strength of the hardboards to energy consumption was found to be proportional to the increase in energy consumption. Furthermore, the flexural strength of the intermediate fractions was relatively high, irrespective of the power input. From this it can be concluded that a recycling process involving the removal and reprocessing of the coarse fibers is indicated.

With such a procedure the obtaining of relatively free stocks from which strong, tough boards can be made may be anticipated. For example, a stock produced at 16 horsepower-days per ton would require remilling of only 46 percent of the material. Since optimum strength values have been found to occur at 40 horsepower-days per ton level, the maximum requirement for the processing in this case would be 34.4 horsepower-days per ton. Lower energy consumptions could be anticipated.

The decrease in the efficiency of the processing in regard to flexural-strength development of the hardboard from fiberized wood is an indication of the degree of degradation of the fibers caused by compression failure. The creation of compression failures in the fibers by twisting and bending them beyond their elastic limit parallels the creation of fiber surface by cutting and fibrillation. Consequently, a board stock of optimum flexural-strength properties is reached at a given energy consumption in milling, and any energy consumed above that point creates bonding surfaces, mostly fines, beyond that required.

## Literature Cited


1. Clark, J. D'A., Proc. Tech. Sec., C.P.P.A. (Jan. 1948).
2. Federal Specifications LLL-F-311 (July 12, 1940).
3. Hrubesky, C. E., Tech. Assoc. Papers *31* 379-388 (1948).
4. Hrubesky, C. E., TAPPI *32* No. 7 315-318 (July 1949).
5. Lowgren, U., West Coast Lumberman *74* No. 2:85 (1947).
6. Manufacture of Pulp and Paper, 5:289-300 (McGraw-Hill Book Co., New York, N. Y., 1939).
7. Markwardt, L. J., and Wilson, T. R. C., U.S.D.A. Tech. Bul. No. 479 (Sept. 1935).
8. Martin, J. S., Tech. Assoc. Meeting, Portland, Oreg., (Sept. 11-15, 1949).
9. Ogland, N. J., Finnish Paper and Timber Jour. *31* No. 4 (Feb. 28, 1949).
10. Schafer, E. R., and Carpenter, L. A., Paper Trade J. *90* No. 19:57.
11. Schafer, E. R., and Heinig, M., Paper Trade J. *93* No. 10:55 (Sept. 3, 1941).
12. Schafer, E. R., and Pew, J. C., Paper Trade J. *116* No. 4:25-32 (Jan. 28, 1943).
13. Schafer, E. R., and Santaholma, M., Paper Trade J. *97* No. 19:40 (Nov. 9, 1933).
14. Schwartz, S. L., Pew, J. C., and Meyer, H. R., Southern Pulp Paper J. *8* (3) 19-22, 38-43, (Aug. 15, 1945).
15. Schwartz, S. L., Pew, J. C., and Schafer, E. R., Tech. Assoc. Papers 30:417-422: Paper Trade Journal 125 No. 14 (Oct. 2, 1947) 37-42.
16. TAPPI Standards—T *227* m-46.
17. Turner, H. D., Hohf, I. P. and Schwartz, S. L., F. P. Res. Proc. 2:100-112 (Mar. 1948).


# Limitations of Ink Adjustments to Paper


F. A. WEYMOUTH*



## Abstract

*This article reviews the methods by which a good printing job is accomplished. It is felt that more press troubles would be eliminated if limitations of the adjustments of inks to papers are better known by the individual who chooses the paper for the job. Ink adjustments that can be made to certain categories of papers are discussed. It is pointed out that new tools are available in the form of tack-graded inks which should lend assistance in the choice of papers for jobs. Not all papers are covered but examples are given and the suggestion made that these ideas can be carried out in other categories of paper. Comments on printability testing are given. It is reported that an increasing number of paper mills and printers are using these methods and are finding them to be of assistance in paper control.*



* Plant Manager, International Printing Ink (Div. of International Corp.) Chicago, Ill.



Presented at a meeting of the American Pulp and Paper Mill Superintendents Association, Inc., in Chicago, Illinois, June 10, 1950.


It has long been recognized that when paper is at the press ready for printing, the individuals then concerned with the immediate production of the job, are the printer and ink manufacturer. It is of prime interest to both, that prior to this choice of paper, full facts have been considered in order that the job may proceed as scheduled and without difficulty. When the job is on the press, labor is costly, which is of increasing concern to the printer. When difficulties arrive, the printer can help to only a limited degree and, in turn, this forces the greatest share of burden on the ink

# Whatever your tank and silo needs get a quotation from KALAMAZOO

Coal and ash silos nearing completion at Veterans Hospital, Saginaw, Michigan. Glazed tile is ideal for permanent, maintenance-free storage buildings of all kinds.

Settling tank for the water purification system of the Schmidt & Ault Paper Company, York, Pa. This glazed tile tank is 12' high, 30' in diameter.

(Above) Exterior view of chest recently completed for one of the large paper mills. Note clean finish.

(Right) Interior view of same horizontal chest, showing propeller agitator. Tile is clean and permanent—yet costs no more.

Workmen putting the finishing touches on wood inlet box for large Southern mill.

**Kalamazoo glazed tile tanks, chests, and storage buildings—designed and erected by Kalamazoo experts—are the perfect answer to the specialized building problems of the paper industry. They are clean—and easily kept clean. They rarely require maintenance attention. They outlast any other type of construction—yet cost no more. When you need new construction—particularly where water or chemicals are involved—write for recommendations.**

## KALAMAZOO TANK and SILO COMPANY

1925 Harrison Street, Kalamazoo, Michigan

**COMPLETE ENGINEERING AND ERECTION SERVICE**

manufacturer. Inkmakers realize that their greatest contribution lies at this point in quickly making ink adjustments and our service organizations have minute men on call day and night throughout the country. We are fully aware that our part of the triad of paper, presswork and ink is the most readily adjusted but there are many people in the Graphic Arts that do not appreciate our limitations.

Prior to the arrival of the paper at the printing press, someone had to make a choice of a particular paper to be printed. Sometimes the paper is purchased by the printer for the job, sometimes by the ultimate consumer, and sometimes the paper simply happens to be on hand. By whom the paper is purchased and ultimately chosen is of no particular interest to this story but the "why" back of its choice is of utmost importance. If the paper was purchased on a price basis, if the paper was chosen because it was used on another job, and the choice made without knowledge or inquiry into the particular press to be employed or the nature of the printing form, from that moment on an unsatisfactory job can be in the making. We inkmakers believe any major troubles and near catastrophies can be averted by such careful initial planning. From this point on the printer should consult his ink supplier and from then on any troubles should be of minor nature.

Let us assume that paper is on the press and we must overcome the problem. In the time alloted, it would be impossible to cover all categories of printing and paper combinations, so we have chosen typical examples to illustrate what can be done and the limitations with respect to ink adjustments.

*Newsprint*—As far as the inkmaker is concerned, two problems show up from time to time. The paper may not absorb the ink rapidly enough and thus cause undue smutting. In this case, compounding with thinner oils will alleviate the trouble but there is a definite limit of thin oils that can be added since the existing strike-through will be increased in direct proportion to the thin oils added. If the paper is too rough, a flatter ink will yield a smoother print.

*E. F. and Supers*—A considerable tonnage of this type of paper is printed typographically with heat dried ink. There is also much used for flat bed printing of books, encyclopedias, etc. The major problem is to print the screen tones open and the solids or type black. If the surface is rough, when sufficient ink is carried the middle tones fill-up. Usually the remedy is to make the ink duller. Super papers may have a wild formation or upon calendering become relatively non-ink receptive in some areas. When such conditions exist it is difficult to make a good smooth laying glossy print. A hard smooth surface is desirable on roto super papers provided there is uniform ink receptivity.

*Machine Coated* — Machine coated papers are mainly printed on rotary type heat dried presses, with a smaller proportion on flat bed presses employing regular oxidizing oil inks. Ink problems encountered with these papers as a group are mainly picking and printability. When correctly made, these papers yield fine results but when incorrectly coated or the coating poorly bound, ink adjustments usually answer the problem. If the coating pick problem concerns a four-color trapping job, the inks can be reduced in tack but almost always at a sacrifice in trapping which means a poorer reproduction of the copy. This statement is true of the tack reduction of any series of four-color inks whether they be printed on supers, machine coated, or full coated stocks. If the coating dusts out, some assistance may then be had by lubricating the ink with vehicle or greases. If the screen tones are choked, the remedy of duller inks often answers the problem provided the printing buyer will accept reduced gloss or finish.

*Coated Papers — Typographic* — At one time or another, the inkmaker is faced with problems of picking, insufficient gloss, poor ink lay, and binding. The problem of pick resistance of coated papers has been most difficult and, in our opinion, least understood. It is too easy to generalize from one printing job to another without study of pertinent facts that make an easy job in one instance and a chore in another. We illustrate in paragraphs to follow our suggestions for minimum pick resistance of coated two-side papers and have broken down these recommendations by the end use of paper. We make this suggestion since the paper industry has not yet set up any standards for pick.

We know many do not prefer pick test waxes because they give erratic results on thermoplastic coating binders. In our tables to follow we correlate the Dennison wax readings on a "non" thermoplastic coating with the International Printing Ink series of tack-graded inks. These inks are non-drying black inks with tack ratings from 1 through 7 with Inkometer readings as shown in *Table I*.

**TABLE I**

| Tack Graded Ink | Inkometer |
|---|---|
| 1 | 7 |
| 2 | 15 |
| 3 | 20 |
| 4 | 25 |
| 5 | 30 |
| 6 | 35 |
| 7 | 45 |

By way of further explanation, a single color press can employ a less viscous ink than an ink on a two-color press since on a two-color press the first down ink must maintain sufficient "pull" to lift the second down and super imposing color in order to insure good trapping.

In gloss ink printing it is well to remember one of the factors involved in making the best gloss print is that the ink must lie on the paper surface. If we are forced to reduce the viscosity greatly, all of the vehicle will sink into the sheet.

The tables to follow serve to illustrate how these factors affect our desired minimum pick resistance for coated two-side papers for typographic printing.

In the case of halftone printing (A) where there are no solids or heavy type, if the pick test drops to 4 or even 3, there may be no press troubles. The usual Inkometer readings for halftone blacks are in the range of 7 to 10. Hence, our recommendation of tack-graded ink is 1 as a minimum. If there is picking trouble, the addition of a little reducer usually is sufficient to take care of it.

In Example "B", oft-times a large tint solid color is superimposed with type or halftones or solids. The average Inkometer reading of such first down inks is 12; hence, our choice of tack-graded ink blending 25% of #1 and 75% of #2 is recommended.

Examples "C" and "D", which involve further limitations with respect to viscosities of ink common to best gloss ink, limit further the field of suitable papers and consequently make more narrow the limits of ink adjustments to maintain trapping and ink gloss.

*Label Coated One Side* — Similar comments can be made of typographic printing requirements for either regular or gloss ink printing. Labels, more often than not, are covered with heavy ink films and are, for the most part, printed with two or more wet trapped colors. We suggest the stock should pass a minimum of a #3 tack-graded ink. (Inkometer reading #20.)

*Offset Coated Papers* — The easily picked coated paper never has had even a half chance in offset lithography. On the basis of average viscosities of normal bodied offset inks, we would suggest the stock pass a minimum of the #3 (20 Inkometer) tack-graded ink.

*Picking Strengths of Papers—Past and Present*—Back in 1938 the writer made a record of pick tests of all the known coated typographic and offset papers produced at that time. A similar group of papers were checked again with Dennison waxes in 1946. Averages made on the pick tests found are listed in table III. It was expected that these pick tests would show a drop because of the paper raw material situation at the end of the War. We recently have made some spot checks of similar papers and can advise that the average resistance to picking remains about the same as it was during 1946.

There is now another adverse factor which has entered the picture. We are referring to the advent of many new printing and offset presses. By and large, these presses either run faster or impose an added burden on the paper because they are multi-color

## TABLE II

SINGLE COLOR PRESS

| | Dennison Wax | Tack-Graded Ink | Inkometer |
|---|---|---|---|
| A.—Halftone—few solids | 5 | 1 | 7 |

TWO-COLOR PRESS

| | Dennison Wax | Tack-Graded Ink | Inkometer |
|---|---|---|---|
| B.—Tint Blocks & Halftone | 6 | 25% #1, 75% #2 | 12 |

SINGLE COLOR PRESS

| | Dennison Wax | Tack-Graded Ink | Inkometer |
|---|---|---|---|
| C.—Gloss Ink, light form | 6 | 25% #1, 75% #2 | 12 |
| heavy form | 7 | #2 | 20 |

TWO-COLOR PRESS

| | Dennison Wax | Tack-Graded Ink | Inkometer |
|---|---|---|---|
| D.—Gloss Ink—2 heavy forms | 7 | 3 | 20 |

presses. As far as we know, there is nothing new on the horizon that will assist us in making markedly lower viscosity inks for these new faster presses. It is a simple physical law that the "pull" of an ink on paper is increased directly with the speed at which the paper leaves the inked plate.

*Binding and chalking*—By and large, printing inks are constructed with vehicles which have a rate of penetration consistent with the usual absorbency of normal papers. Once in a while a paper stock will show up that has unusually rapid ink absorption. Many times this excessively rapid absorption will drain away the ink vehicle from the pigment. This action leaves the pigment without a binder; and we refer to this difficulty as poor ink binding or chalking. This trouble is not to be confused with poor drying which refers to a too slow oxidation or polymerization of the vehicle.

If the inkmaker has been supplied with a sample of the stock prior to the first run, he will find this poor binding at the time he makes his color proof. At that time, he usually can change the nature of the vehicle. He often adds binding varnishes, such as gloss varnish, to slow up the rate of vehicle penetration. If, however, the stock is already printed without a special ink, there is little that the inkmaker can do beyond preparing a transparent size or varnish which must be applied at a subsequent printing.

*Printability*—Thus far we have spent most of our time in explaining minimum picking requirements. We do not mean to infer that printability is not equally and actually often more important. It is a fact that given two papers of different degrees of printability the best paper with its proper ink can never be matched by a poor printing paper employing an ink of highest quality. It is unfortunate that there is not a numerical method by which we may record printability.

Marked progress has been made in testing printability of paper with ink by a number of paper mills using empirical methods published in 1942 and used by some mills prior to that time. Whether or not they use the laboratory proof press method or actual press

## TABLE III

**Pick Test Averages on Coated Typographic and Offset Papers**

| | Pick Tests (Dennison Waxes) Made in 1938 | Made in 1946 |
|---|---|---|
| TYPOGRAPHIC | | |
| Label | 7.3 | 7.0 |
| C.2S—#1 Grade | 6.5 | 5 to 6 |
| #2 Grade | 6.6 | 6 |
| #4 Grade | 7.0 | 6 |
| OFFSET | | |
| Offset Label C.1.S | 7 | 7.0 |
| Offset Enamel | 7.0 | 7.0 |

equipment, their papers are known throughout the Graphic Arts as being the best for printability. During the past six months, we have seen a similar interest shown among board mills and know that they are setting themselves up to obtain a running picture on the printing quality of board.

You will be interested to know that a number of paper mills, holding top positions in the industry, are using proof printing for testing practically every roll and skid of paper made. They have been doing this for several years. We are sure that these mills would not do this extra work if it did not pay dividends. Similarly, in some of the major printing plants of the Country, we have seen the value of having their laboratory people check the printability and picking strength of paper. In most instances, they spot-check rolls of paper from a given car. Mutual standards have been agreed upon by the mill and the printer. This testing gives the printer an excellent picture over a period of months as to how the paper from a given mill is running. Once in a while, during these testing procedures, a poor lot of paper will be found and the pressroom is advised. Sometimes adjustments in ink are made; and sometimes the press speed may be varied. It can well be appreciated that in these large printing plants that operate day and night, it is one thing for a pressroom superintendent to know about some bad paper coming up during his shift; another thing for him not to know about it and to find himself in the middle of many difficulties and wonder whether the fault is due to the press, plates, ink, or paper.

*Conclusion*—It is suggested that the most satisfactory way to approach a well printed job is concerned with the planning of the job before it goes to press. We refer to a careful choice of paper, keeping in mind the nature of the printing form, the nature of the printing process, and the speed of the press. It follows that the individuals in planning such a job must have a knowledge of some of the limitations of ink. We have cited some representative examples of ink limitations that are tied in with some representative types of papers. The author stresses the fact that the main difficulties confronting the inkmaker are the problems of picking, printability, insufficient gloss, and binding. He feels that by using the system of tack-graded inks, the paper industry could come to an agreement as to standards for tack. Similarly, to answer the problem of poor ink lay, the use of printability testing methods is being adopted by more paper mills and printers each year. It is gratifying to know that the original work reported in 1942 has grown, and we see increasing evidence of its rapid expansion in the future.

### Literature Cited


1. Testing Printability of Paper with Ink—I. Paper Trade Journal (April 9, 1942). F. A. Weymouth.
2. Testing Printability of Paper with Ink—II. Paper Trade Journal (August 12, 1948). O. Berberich, L. Engelhart, & M. Zucker.
3. Some Observations on the relation of Coated Papers to Ink. F. F. A. Weymouth.


### Get Wage Increase

HOLYOKE, Mass. — Management and labor in the papermaking industry signed a new one-year wage contract. This action followed in less than 24 hours the acceptance of management's terms by Local 226, Paper Mill Workers. The contract allows a five cents hourly wage increase throughout the manufacturing and finishing ends of the industry. The original request of labor was a 20-cents hourly increase.

### Bancroft Paper Activities

The Bancroft Paper Co., Inc., will open a branch in Natchez, Miss., about the middle of June. The location is 7 Devereaux street. Millard Williams will be the local manager. Bill Clopton, formerly with the Dixie Cup Co., Fort Smith, Ark., has joined the organization in Shreveport, La., as assistant manager. James Corley was transferred from the Monroe office to the sales department of the Baton Rouge office. Mr. Corley will work a country territory which includes much of the Evangeline country of Louisiana. The annual outing was held on May 13 and 14 at Chicot State Park where 65 or 70 of the company employes enjoyed a two-day fishing trip.

### Walkerville Bag To Surrender Charter

OTTAWA — Official notice has been given here that the Walkerville Bag Mfg. Co., Ltd., Montreal, Que., is applying for leave to surrender its charter.

# Fines in the Paper Machine Furnish

ANTON J. HAUG

"Not the amount but their quality matters." So states James d'A. Clark in his "Notes on the Quality of Groundwood" published in the Technical Association Paper of February, 1940.

Generally the term *Fines* is used rather loosely when reference is made to their beneficial or detrimental effect on the sheet of paper. Of course, it is conceded that a certain amount of Fines, sometimes called *Flour* is needed to cement the fiber structure and fill the sheet. Much divergence of opinion exists about the correct amount required for maximum strength, sheet formation and trouble-free running on the paper machine. Often, both the pros and cons are right as far as their individual cases under discussion are concerned but, unknowingly perhaps, they are comparing results obtained with different grades of Fines. *Flour* does not seem the right word for this ingredient.

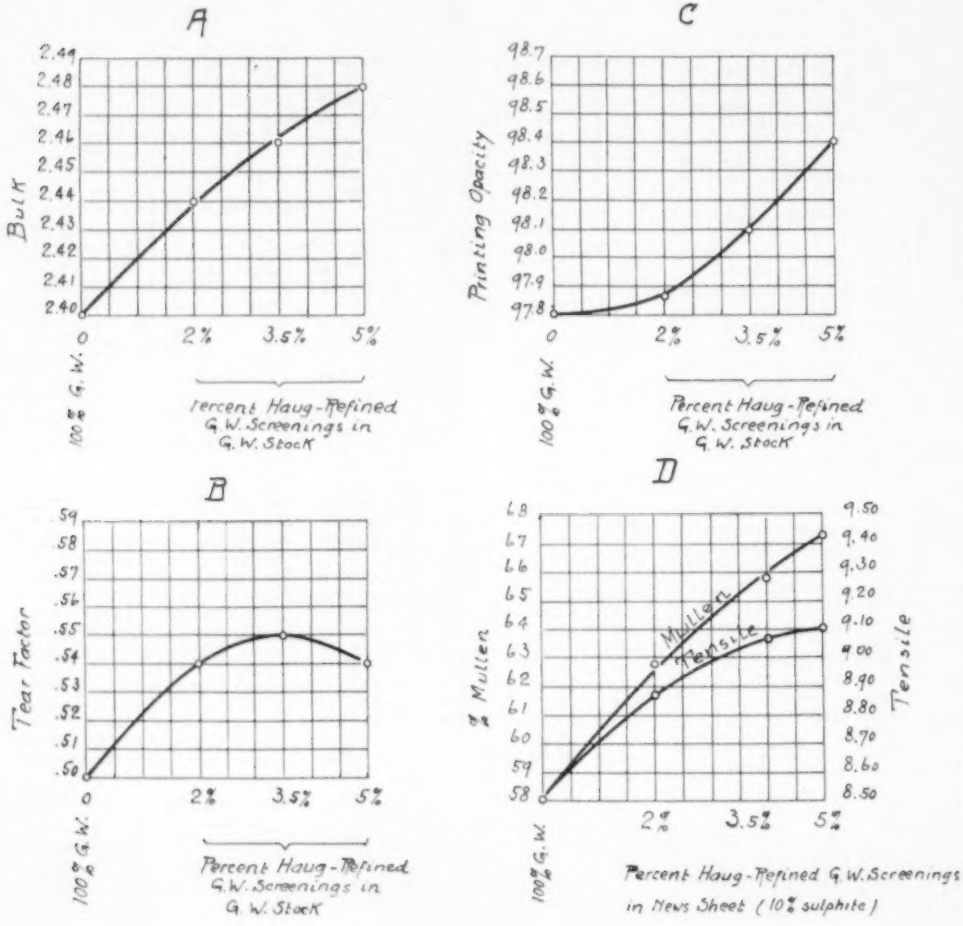
Clark has shown numerically and concisely that the various strength factors of the final sheet are affected not so much by the amount of Fines but by their quality or suitability.

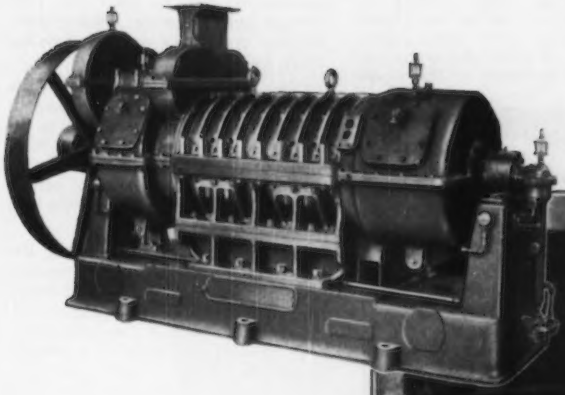
Induced to further studies by Clark's valuable paper and by the data submitted by various mills on the effect of highly refined groundwood screenings in the sheet, some investigations were carried out to determine the reason for the pronounced improvement to the sheet as shown by these data.

As seen in *charts A, B* and *C* the effect of various percentages of refined groundwood screenings in the groundwood is beneficial to Bulk, Tear and Printing Opacity in a marked degree. Similarly, *chart D* shows an interesting increase in Mullen and Tensile when various percentages of refined groundwood screenings are added to the news furnish.

Naturally, the improvement cannot be simply credited to the given amount of Fines but only to the particular Fines used.

Photomicrographs were made of regular groundwood from the cen-





Today's terrific strain on the continuous successful existence of mills calls for keen selection of machinery that brings the greatest returns.

That is why European mills are following the leading mills over here in installing

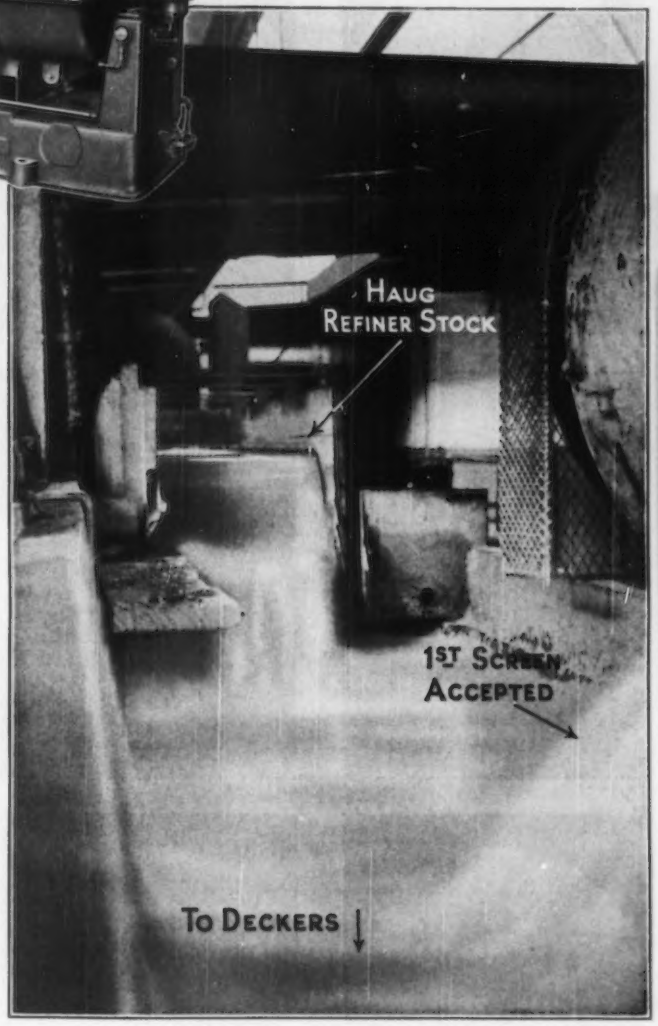
HAUG-REFINERS

in increasing numbers.

Recent installations include progressive mills in the U. S. and Canada, Sweden, Norway, Finland, Poland, Spain, Italy, France, Belgium, Argentine, and Chile.

A user says:

"Our refiner stock is just as good as the regular #1 stock and may be better. We have been grinding coarser, so as to get more refiner stock."



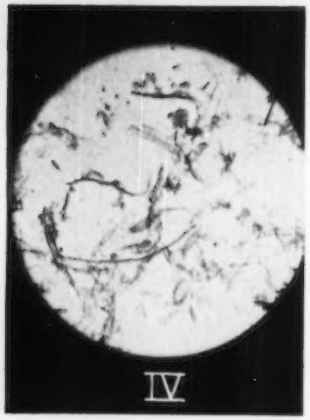

**ANTON J. HAUG,** Builders of Paper Mill Machinery, **NASHUA, N. H.—U. S. A.**

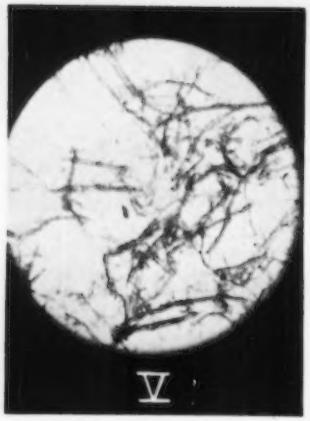
**Canadian Builders**
**Canadian Ingersoll Rand Co.**

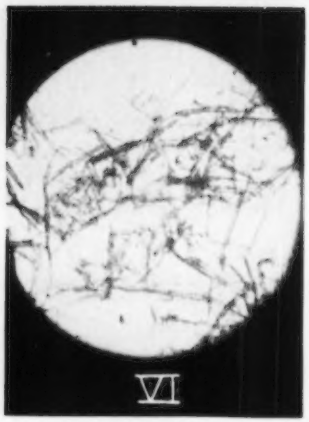
**European Builders**
**Aktiebolaget Kamyr**

trifugal screens of a news mill *(figures I* and *II)*. Another set was made from the Fines separated from a portion of this groundwood *(figures III* and *IV)* and a further set showing the highly refined groundwood screenings from Haug Refiners *(figures V* and *VI)*. The magnification is the same for all the pictures.

A comparison of the photos discloses clearly why the refined groundwood screenings have such a beneficial effect on sheet formation and on other characteristics of the furnish when mixed with it. The refiner stock is considerably finer than regular groundwood and in itself has little strength but its superior binding qualities and uniformity over groundwood Fines are apparent.




Closely connected with the problem of Fines is, of course, the amount of white water loss. Generally it is assumed that the more Fines are used the greater will be this loss. This may be right when applied to a certain grade of Fines but does not hold true in a general sense.

When an installation of 2 Haug Refiners was made in a large modern news mill for the production of highly refined groundwood screenings, opinions were divided and some misgivings were voiced with regard to a possible increase in the white water loss. Careful checks were made, therefore, over an extended period of time. The result was an unexpected reduction in white water loss in spite of the fact that all groundwood screenings were refined to an exceptionally fine pulp. The explanation given by the paper mill superintendent was that the fine stock from the refiners, being freer and uniform, caught some of the white water Fines and helped to retain them in the sheet. Pictures V and VI of the refined stock show the excellent sheet forming property of this fine stock which is the unscreened direct discharge from the refiners.

Making the right kind of filler stock from groundwood screenings requires a refiner installation that permits uniform feed and controlled consistency to the refiner; and the internal equipment of the machine must be suited to the production of fine stock. Screenings in a mill do not have the same nature at all times. The type of wood used, temperature of the stock, method of burring the stones and screening the stock changes them so that some adjustments in the refiner operation should be made if requirements for a definite quality of refined stock are to be met. These adjustments include regulation for consistency, rate of feed and/or change in refiner speed.

With the possibility of producing a clean fine filler stock from groundwood screenings of a definite and determinable quality with the Haug Refiner, it is now entirely feasible to increase grinder production by making longer and freer stock, and mixing with it the refined screenings to balance the furnish for the desired properties of the final sheet. This practice results in greater grinder production with less HP/Ton and less total HP for the mill output. The refiners make stock for 10 to 12 HP/Ton, in addition to saving the screenings and improving the general quality of the mill's product.

Like ideal convention delegates,

# Asten Dryer Felts

**have these characteristics:**

1. Resistance to high temperatures
2. Rapid absorption of moisture
3. Operate well at high speeds
4. Require a minimum of attention
5. Don't come apart at the seams
6. Make friends easily
7. Once known, are never forgotten

**ASTEN-HILL MFG. CO.**
PHILADELPHIA, PENNA.

**ASTEN-HILL, LTD.**
VALLEYFIELD, QUE.

# A Joint Responsibility For Industry And The Chamber Of Commerce

E. W. TINKER
Executive Secretary, American Paper and Pulp Assn.

It is my belief that no one should impose upon the time of a group such as this unless he can leave something worth while with those present. I trust I will be able to do so and assure you that if I can, I will feel that my time is well spent.

Organizations such as the Chambers of Commerce, representing specific communities, have a definite purpose to serve in promoting and protecting their welfare. I am sure that the Neenah-Menasha Chamber of Commerce has made an outstanding record in this respect.

Many of us look upon Neenah-Menasha as the paper capital of the United States. Probably this is true, not so much because of the tonnage of paper produced, but because of the concentration of the industry in these communities and their interlocking welfare. In my own mind, the leadership within the industry that has emanated from your citizenry has rendered the entire industry under an obligation to you. Certainly I would assume that the businessmen of these communities have a wholehearted interest in the stability and prosperity of those companies that support you.

Just how the Chamber of Commerce and the industry in Neenah and Menasha maintain mutual understanding and contact, I am not aware. Beyond a doubt you, in your everyday business, meet individually and I suppose, on occasion, listen to discussions by individuals with regard to specific programs and problems. This is fine and extremely desirable. However, I would like to point out to you the need for your consideration and participation in certain broader aspects of the situation as it now exists and as it will exist in the future. Your own welfare as individual business men is interlocked with the welfare of the community and the welfare of this community is intimately involved in policies determined and effectuated in Washington, D. C., and Madison, Wisconsin. This may seem a pretty far cry to you but I can assure you that it is very real and if it is not recognized by organizations such as yours, then communities dependent upon the pulp and paper industries are in for very real difficulties.

Let me illustrate. There is no doubt but that the American public has been pretty well sold on the idea that increased international trade is essential to the survival of democratic nations. Probably you and I would have no quarrel with this as a generalized objective. However, the degree to which the United States can support this world economy is to me, and to a great many thinking men, a serious question. Our industry happens to be most vulnerable in this general program and is, even now, the major contributor to foreign exchange. If all grades of paper are to be put on the free list, with depreciated foreign currencies, the domestic industry will be faced with competition from foreign sources with their competitors actually paid a bonus to market their products in the United States. This, added to very much lower labor costs, leaves us wide open to unrestrained exploitation and that affects you individually and it affects this community. Certainly it is of vital concern to individuals who earn their livelihood in the pulp and paper industry. The State Department and the ECA publicly announced their recognition of the hardships that might accrue from their program, which could be summarized with the slogan "Don't Buy American." They recognize that industries in the United States will be destroyed and have suggested that the employes who will be without jobs be placed upon the relief rolls until such time as they can be retrained for employment within other industries and communities, not adversely affected. Since Neenah and Menasha are largely dependent upon the pulp and paper industry, this suggested program deserves your earnest and serious consideration.

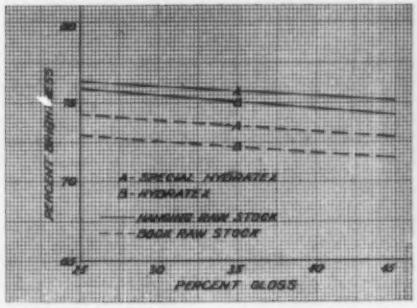
Let me assure you that while Neenah and Menasha are particularly vulnerable to this general conception, there are dozens of other communities in the United States that are in grave danger and that are equally vulnerable. I have little doubt that in the world economy the prosperity of the Swiss watch industry is of concern. However, I can imagine that it was pretty cold comfort to the town of Waltham, Mass., when almost their sole supporting enterprise was liquidated on the order of international well being, with the benefits accruing to those industries where labor costs were the minimum element in their operations. These are cold, basic, economic situations and must be faced.

Let me cite another and somewhat related case by way of illustrating my point. There is at the present time tremendous propaganda and pressure being put upon the United States Senate to approve the International Trade Organization Charter. I would hazard a guess that not over five hundred people in the entire United States really understand it. I might even hazard a guess that a majority of the members of Congress do not understand it. On the surface it is of little concern to the Chamber of Commerce of Neenah-Menasha. However, I have great faith in the common sense and practical judgment of people when they know the basic facts. I make no pretense to understand the intricacies of this charter but it does provide that each nation signing it will have an equal vote with all others. In other words, the United States would have an equal vote with Chili, with Cuba, and with Finland. This might not be so serious but the charter gives the government organization authority to allocate production. It not only gives authority to allocate production but to fix prices, these by way of illustration. This could mean, for instance, that were pulp in short supply in the United States, it could be allocated to any applicant in foreign countries at a price determined by the international organization. This same could be applied to paper and I leave it to your imagination, the chaos that would inevitably result. The same process could be applied to pulpwood. In some of the proposals that I have heard tentatively suggested, it seemed to me that we had reached a point where dependence upon bounty from the United States had led to the conclusion that this bounty had no limits and would always be forthcoming. In an international conference that I attended, as a spectator, a proposal was made that using our own money we buy domestic wood, ship it to a foreign country where it would be manufactured into pulp and paper, the paper being returned to this country duty

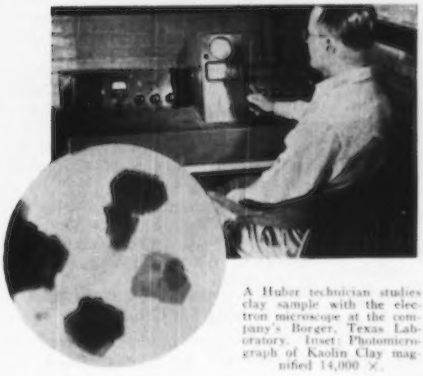
# KAOLIN CLAY FACTS...*for Paper Makers*

NUMBER 4 OF A SERIES FROM THE J. M. HUBER CORPORATION LABORATORIES

**TESTS SHOW HOW CALENDERING REDUCES BRIGHTNESS OF COATED PAPER SURFACES.** An uncalendered coating surface possesses the lowest gloss and the highest brightness. Calendering reduces the brightness but enhances the polish or gloss of the surface. In the Huber Laboratory surfaces treated with *Hydratex* and *Special Hydratex* clays were calendered to give different degrees of gloss as determined on the Bausch and Lomb glossmeter, and then tested for brightness with the General Electric Reflection Meter. The accompanying graph shows how brightness decreases with increased gloss. Both *Hydratex* and *Special Hydratex* are Huber coating Clays. In *Hydratex*, 70-72 per cent of the particles are less than 2 microns in diameter; in *Special Hydratex*, 78-81 per cent.




Effect of Clay Fineness on loss of brightness due to calendering in a starch-clay coating.



A Huber technician studies clay sample with the electron microscope at the company's Borger, Texas Laboratory. Inset: Photomicrograph of Kaolin Clay magnified 14,000 ×.

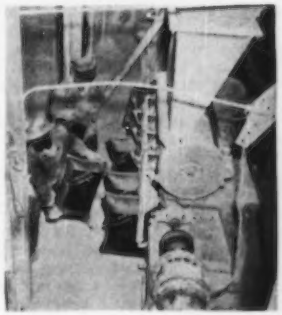
**QUALITIES OF A SUCCESSFUL COATING PREPARATION.** A coating preparation must fulfill a number of requirements. It must penetrate and bond satisfactorily to the surface of the paper. It must flow sufficiently well to permit the required degree of spreading at the machine speed, and it must have the property of leveling and setting after being applied to the surface of the paper. It should be of such a character that on drying, a smooth even surface is produced which can be calendered to produce gloss without the application of undue pressures. While most of these properties are influenced by the nature of the adhesive material, the various pigments have a considerable effect. Kaolin clays have long been established as excellent pigments to satisfy the requirements of a successful coating preparation.

**Have you received your copy of "Kaolin Clays and Their Industrial Uses"—new Huber 144-page technical reference book? Write on your company letterhead.**

**HOW WATER WASHED AND AIR-FLOATED FILLER CLAYS COMPARE.** The chief advantage of washed clay is its less dusty nature. It also has about twice the bulk density of normal air-floated clay, and can be handled without a pneumatic conveying system. Smaller mills may take washed filler in bulk and unload it manually, or by belt, bucket, or screw type conveyor. Huber's "Aerfloted" clay, however, with its low moisture content (1-2%, compared to 4-7%) can reduce freight costs up to 5%. "Aerfloted" clays, too, are less expensive and equal or surpass water washed fillers in quality. Leading paper mills have standardized on air-floated filler.

PARTICLE SIZE DISTRIBUTION OF FILLER GRADE PAPER CLAYS.

| Diameter in Microns | Huber "Aerfloted" Clays | | Water Washed Filler Clays (Ga.) | |
|---|---|---|---|---|
| | Hi White (Ga.) | Paragon (S. C.) | Fine | Coarse |
| Above 5 | 14.6% | 27.9% | 14.6% | 28.0% |
| 4-5 | 5.0 | 5.2 | 4.7 | 8.1 |
| 3-4 | 6.7 | 6.7 | 6.8 | 9.8 |
| 2-3 | 9.9 | 8.7 | 9.9 | 15.6 |
| 1-2 | 15.8 | 12.5 | 15.5 | 16.0 |
| 0.5-1 | 18.0 | 11.3 | 17.1 | 16.0 |
| 0-0.5 | 30.0 | 27.7 | 31.4 | 6.5 |
| Above 5 | 14.6 | 27.9 | 14.6 | 28.0 |
| Under 2 | 63.8 | 51.5 | 64.0 | 38.5 |



"Aerfloted" Clays are automatically weighed during bagging. They have an apparent density of 25-30 pounds per cubic foot.

HUBER

**J. M. HUBER CORPORATION,** *342 Madison Avenue, New York 17, N. Y.*

MINES & PLANTS—LANGLEY, S.C., GRANITEVILLE, S.C., AND HUBER, GA.

ONE OF THE WORLD'S LARGEST CLAY PRODUCERS

free, to compete with our own products.

Another illustration, recently there was appointed a Water Resources Policy Commission. This Commission is to report to the President of the United States by the end of the year. What its recommendations will be, no one knows, but it is perfectly obvious that it intends to recommend to the Congress actions that will be of grave concern to those whose employment and welfare is dependent upon the use of water for industrial purposes. It has been our contention that in matters of this kind, decisions should be made only after local conditions had received consideration. Probably the recommendations of this Commission will have direct application to the Fox River Valley and the industries dependent upon it. They can be vitally affected and, to the extent that they are, the conclusions of the Commission will be of grave concern to you as an organized Chamber of Commerce and as individual citizens.

I have discussed three matters of current concern and I could discuss several more. However, these cases were cited merely by way of illustration. I would now like to ask you for some serious thinking as to what can be done about it. I know perfectly well that the usual Chamber of Commerce does an effective job in protecting and promoting the welfare of the individual communities in local matters. However, I suggest that you develop a plan that will assure that you be informed and have full knowledge with regard to state and national problems of concern to you. Business and industry in the United States can no longer take the position of letting "George do it." If the Chamber of Commerce of Neenah-Menasha depends upon the Chamber of Commerce of Wausau, Duluth, or Beloxi, Mississippi, then it is not taking a proper position of leadership. I hope there exists an organized liaison, or, if there does not already exist such a liaison, that one will be established so that you can be assured of full information with regard to these matters of concern to you. In as far as the pulp and paper industry in the State of Wisconsin, and of your particular communities, are involved, I feel most strongly that they should cooperate with you to the extent, regardless of whatever it takes, of meeting with you in an organized way to assure that you are fully informed. I believe unquestionably that a plan should be developed that would enable you, in orderly fashion, to reach organized labor and semi-public organizations that are equally involved in these problems. Beyond that, procedure should be developed so that you can express yourselves effectively.

It is with full realization that in all probability you have in some degree established an arrangement that would accomplish the objectives that I have suggested. However, no matter how far you have gone, unless you are the very rare exception, there is room for improvement. In my position in the pulp and paper industry I have endeavored to retain by perspective as this vast industry, the sixth in the United States, has grown and I am convinced, in the welfare of all the people of the United States, that as an industry we can only serve our best purpose if our needs and our jeopardies are fully understood by the communities in which we operate and by all those who obtain their livelihood from the industry. I wish we might see a development, through the Neenah-Menasha Chamber of Commerce, that would be exemplary from a cooperative organization standpoint to assure this understanding and effective action.

In my opinion, unless we are to face a complete change in our entire system in this country, some effective democratic process must be developed, representing not individual groups, but broad groups, including workers, business men and industry, that have a common purpose in the public welfare. To me the public welfare means the welfare of individuals, at least those that are reasonably law abiding.

One thing more and I am finished. Apparently it has become good political strategy to condemn industry and business. In spite of proven success and the highest standard of living that the world has ever known, many of our politicians make great capital, not out of cooperative efforts to improve our high standards, but by every conceivable tactic that can be exploited politically under the assumption that there is something evil in our industrial and business enterprise. I have spent many years in government service and I think I know something of the inner workings of government. I can say to you, without the slightest hesitation, that after over a decade, in a position of some responsibility with the pulp and paper industry, that the industry has never taken a position on a question involving its welfare, and the welfare of its workers, that has not been coincident with the broad public interest. It is with appreciation of this fact that I suggest to you a liaison arrangement between labor, business and industry, in your community that will assure understanding. Only a strong Chamber of Commerce could make certain the success of such an undertaking but if such a project could be brought to fruition, I would hope that your purposes and your procedures could be placed before hundreds of other communities as an inspiration to them to go and do likewise.

## New Distributor

Los Angeles, Calif. — The Los Angeles Paper Co., 2149 W. Washington Blvd., has been organized to sell job lots, side runs, close outs in the Los Angeles area. Peter Wilcox is the manager.

## Ontario Reforestation Field Day

Ottawa—The Ontario Conservation and Reforestation Assn., Zone 5, is planning a Field Day at the Larose Forest on June 14. The purpose of the event is to interest Eastern Ontario counties in combating forest fires which occur within their boundaries.

A demonstration by firms of forest fire-fighting equipment will be given during the day as well as other events.

## Yale Summer Forestry Course

New Haven, Conn.—Approximately 12 graduate students will attend the annual summer term encampment of the Yale School of Forestry, Dean George A. Garratt announced today. The session will again be held at the School's camp in the Great Mountain Forest, Litchfield County, and will run from June 19 through September 2.

## Spees Elected President of Wolverine

Grand Rapids, Mich.—The election of Russell H. Spees as president and general manager of the Wolverine Carton Co., Grand Rapids, was announced recently. Mr. Spees succeeds his father, Thomas V. Spees, founder of the company, whose death occurred on February 12, 1950.

Mr. Spees has been associated with the company since it was organized in April, 1922.

Other officers of the Wolverine Carton Co. are: Lyle B. Spees, vice-president; John P. Otto, secretary and treasurer; Walter E. Sooy, chairman of the board.

## New Building For Crown Paper Box

Indianapolis, Ind.—New headquarters for the Crown Paper Box Corp., 31 E. George street, will be under pick and shovel during the month. This proposed plant and office building will be constructed on a three-acre tract at Montcalm and 21st streets. The $175,000 structure will be erected by Industrial Operations, Inc., and the moving-in deadline is set for March, 1951. Clarence Zintel is president of Crown Paper. J. Vincent Ney of Industrial will handle construction details.

## Dillard Purchases Palmetto Paper Co.

Greensboro, N. C. — Controlling interest in the Palmetto Paper Co., Columbia, S.C., has been acquired by Dillard Paper Co. with headquarters in Greensboro. This brings the number of Dillard houses to nine in five southern states.

The president of the company, W. J. Haile, Jr., will continue as president and manager of the firm under the new ownership. All other personnel will be retained, according to the announcement.

The Palmetto Paper Co. will operate as a subsidiary of the Dillard firm but will retain its present name, Mr. Morrissett stated.

# The Rice Barton

# DynoPulper

## —completes treatment of paper stock in one machine

**Other DynoMachines:**

- The **QuatroPulper** is designed for processing stock in large capacities . . . either batch or continuous operation.
- The **DynoChest** is primarily for disintegrating stock in slush form . . . batch operation.
- The **Dynofiner** is for performing the same operation on a continuous basis.

**The DynoPulper** is a highly efficient machine for processing any type of pulp or waste paper . . . completing the stock treatment in one operation.

The DynoPulper employs two opposed DynoPellers (described below) which rapidly and economically reduce the stock to slush form . . . then continue the operation to completely separate the individual fibres one from the other. There is no appreciable drop in freeness and no cutting or shortening the original fibre.

The fibre characteristics of the stock can be developed further by giving it additional time in the DynoPulper . . . eliminating the need for beating on many grades of paper.

**The DynoPeller**

is the heart of all DynoMachines. Its concave face is lined with rough, hard carbide particles. As the DynoPeller rotates it causes a suction at its center that pulls the stock towards it. Centrifugal force then causes the stock to flow rapidly over the rough carbide particles. This effective dynomizing action completely disintegrates the stock . . . separating each fibre from its neighbor while maintaining its original length.

*Write for complete information.*

RICE BARTON Research Corporation

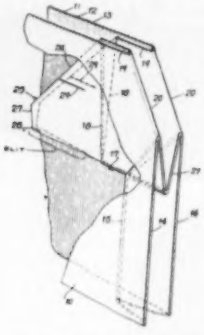
WORCESTER 1, MASS.

# Patent Abstracts

● ***In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.***

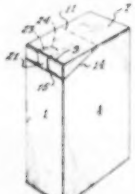
## United States

*Re-issue No. 23,230 — Valve Bag.* Harry E. Lee, Oswego, N. Y., assignor to St. Regis Paper Company, New York, N. Y. Filed for re-issue January 27, 1950 — Issued May 16, 1950.



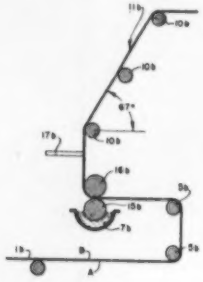
A multi-ply valve bag having its body portion formed of at least three flattened tubes gusseted at their sides and including an inner tube surrounded by an intermediate tube and an outer tube, the top corner portion of the intermediate tube at the valve corner extending substantially beyond the inner and outer tubes and such corner being folded inwardly of the bag to form a valve with the extension of the intermediate tube providing a flexible valve flap extension adapted to be pressed up against the inside top portion of the bag by the contents of the bag when filled to check sifting of such contents through the valve, the intermediate tube at the top corner opposite from the valve corner being formed with a cut-out gusset area extending down from its upper edge, such area corresponding in extent to that of said flap extension and being covered internally and externally of the bag by the inner and outer tube walls.

*2,508,193 — Reclosable Carton.* William A. Ringler, Wayne, Pa., assignor to The Gardner Board and Carton Co. Filed February 23, 1946 — Issued May 16, 1950.



A blank for a cotton of the class described comprising enclosing body walls and a glue flap in articulation forming a structure capable of being tubed, seal-end flaps on the ends of said enclosing walls, and an extension on said glue flap providing a portion capable of projecting above the tops of the said enclosing walls, contiguous ones of said enclosing walls having lines of weakening therein on which said walls may be broken to form a lid for opening the carton, said glue flap extension being located at a place of opening, normally lying within the closed carton but being capable of swinging outwardly to come outside the said lid upon reclosure thereof.

*2,508,287 — Process for Coating Paper.* Charles R. Outterson and Benjamin A. Ford, Richmond, Va., assignors to Albemarle Paper Manufacturing Company, Richmond, Va. Filed October 14, 1946 — Issued May 16, 1950.



The process of coating paper which comprises applying a relatively viscous mobile aqueous coating composition as a coating over one face of a continuously moving web, advancing the web with the coated face uppermost, while said coating is still mobile, upwardly along a path which is inclined at an angle greater than that at which said viscous coating composition will remain in repose, whereby said coating composition flows by gravity reversely to the travel of the web, correlating the speed of movement of the web with the rate of flow and the setting rate of the coating composition, whereby mobility of the coating composition during said gravity flow continues until smoothing is completed, and moving the web along said inclined path until the surface of the coating is smoothed by said gravity flow.

*2,508,341 — Vinyl Resin Emulsion.* Wilfred K. Wilson, Springfield, Mass., assignor to Shawinigan Resins Corporation, Springfield, Mass. Filed June 19, 1946 — Issued May 16, 1950.

A process for preparing a stable aqueous emulsion containing more than 25 parts for each 100 parts of water of a polymerized normally liquid, water-insoluble polymerizable compound containing a terminal ethylene group, which comprises carrying out the polymerization of said polymerizable compound while dispersed in an aqueous medium containing for every 100 parts of water, 0.01-2.0 parts of a non-polymerizable surface tension depressant, 1-10 parts of a hydrophilic colloid and a sufficinet amount of a water-soluble per compound to supply 0.001-0.1 part of available oxygen, the polymerizable material being introduced into said aqueous medium at such a rate that not over about 25 parts of monomer for every 100 parts of water are present substantially throughout the polymerization.

*2,508,342 — Vinyl Resin Emulsion.* Wilfred K. Wilson, Springfield, Mass., assignor to Shawinigan Resins Corporation, Springfield, Mass. Filed November 22, 1946—Issued May 16, 1950.

A process for preparing a stable aqueous emulsion of polyvinyl acetate which comprises polymerizing vinyl acetate while dispersed in an aqueous medium containing for every 100 parts of water, 1-10 parts of a hydroxy ethyl cellulose, 0.01-2.0 parts of a non-polymerizable surface tension depressant characterized by containing an alkali metal sulfonate of an alkyl aryl hydrocarbon, said hydrocarbon containing 10-20 carbon atoms, and a sufficient amount of a water soluble persulfate to supply 0.001-0.1 part of available oxygen, the vinyl acetate being introduced at such a rate that not over about 25 perts of monomer for every 100 parts of water are present substantially throughout the polymerization, and the weight ratio of water to total vinyl acetate introduced and polymerized is between 100:30 and 100:60, whereby the polymer particles have a diameter of 0.05-0.2 micron.

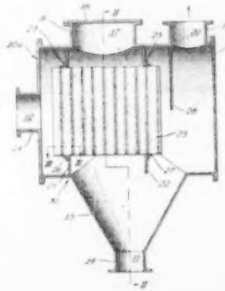
*2,508,343 — Polyvinyl Acetate Emulsion.* Wilfred K. Wilson, Springfield, Mass., assignor to Shawinigan Resins Corporation, Springfield, Mass. Filed November 22, 1946 — Issued May 16, 1950.

A process for preparing a stable aqueous emulsion of polyvinyl acetate which comprises polymerizing vinyl acetate while dispersed in an aqueous medium containing for every 100 parts of water, 1-10 parts of gum arabic, 0.01-2.0 parts of a non-polymerizable surface tension depressant characterized by containing an alkali metal sulfonate group and 10-20 carbon atoms and a sufficient amount of water soluble per compound to supply 0.001-0.1 part of available oxygen, the vinyl acetate being introduced at such a rate that not over about 25 parts of monomer for every 100 parts of water are present substantially throughout the polymerization, the weight ratio of water to total vinyl acetate introduced and polymerized is between 100:30 and 100:60, whereby the polymer particles have a diameter of 0.05-0.2 micron.

*2,508,480—Waterproofing Compound for Masonry.* Harry L. Ainsworth, Denver, Colo. Filed December 31, 1947 — Issued May 23, 1950.

A compound for forming a waterproof paste for sealing concrete walls and the like, comprising ammonium alum, 2 parts; magnesium sulphate, 5 parts; potassium bitartrate, 1 part; sodium chloride, 2 parts; ground sand (100 mesh), 16 parts; calcium sulphate, 37 parts; and Portland cement, 37 parts.

*2,508,528—Foam Separator.* John A. McPherson, Mosinee, Wis., assignor to Mosinee Paper Mills Company, Mosinee, Wis. Filed January 12, 1949 — Issued May 23, 1950.



# NOPCO DEFOAMERS
## first in the field, and still first!

1ST

More than 20 years have glided by since Nopco developed the first chemical defoamer for the pulp and paper industries.

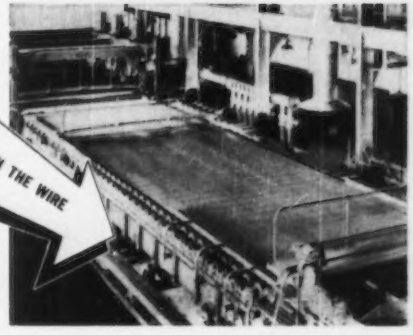
Today, that fact is still your best guarantee of Nopco defoamer superiority. Why? From the moment we introduced our pioneer product, we have continued our exhaustive research to effect constant improvements . . . maintaining a standard of quality unequalled in the field.

From the first, on-the-spot mill conditions have received our particular attention. And solving countless specific problems has provided us with a wealth of vital foam-control data that has no counterpart.

Our outstanding laboratory is uniquely equipped with specialized knowledge and exclusive techniques. No effort is spared to provide defoamers with exactly the characteristics desired. The superior performance of a standard product may often be heightened to meet the needs of an individual mill.

Yes, foam control can be a costly problem unless you put it in the hands of specialists. Following the recommendations of any but the expert can lead to losses that may never be recovered.

Our technical know-how, production facilities, and highly trained sales and service personnel have solved defoamer problems for mills throughout the world. Let us train our sights on your foam problem. "Shooting in the dark" does not pay off.




NOPCO
EVOLVED THRU RESEARCH

**NOPCO CHEMICAL COMPANY**

*Formerly National Oil Products Company*

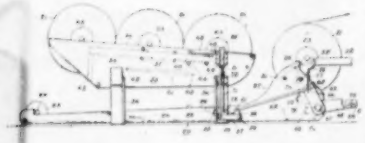
HARRISON, NEW JERSEY

Branches: Boston, Chicago, Cedartown, Ga., Richmond, Calif.

*Reg. U. S. Pat. Off.

A foam separating apparatus comprising a tank defining a chamber, an inlet for supplying a foaming liquid into said chamber, an outlet disposed below said inlet for discharging liquid from said chamber, a second outlet disposed above and spaced horizontally from said inlet for discharging vapors from said chamber, a plurality of spaced, corrugated baffles disposed in said chamber in the path of liquid flowing between said inlet and said vapor discharge outlet and spaced horizontally from both said inlet and said vapor outlet for collapsing foam bubbles in said foaming liquid passing between said baffles and means for securing said baffles in said chamber in the space between said inlet and said second outlet.

*2,508,566 — Web Roll Backstand.* Frank E. Dunton, Plattsburg, N.Y., assignor, by mesne assignments, to The Diamond Match Company, New York, N.Y. Filed June 10, 1946 — Issued May 23, 1950.



In combination, means for supporting a wound roll of web material in one position and means for supporting an unwinding roll of material in a second position, means for first transferring said second roll to a third position, means for carrying and throwing said first roll to said second position, and a single actuatable means actuating said first transferring means and said carrying and throwing means.

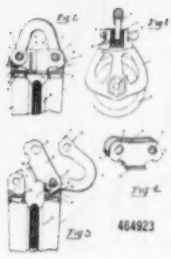
## Canadian

*464,914 — Coated Paper and Method of Preventing Offset.* Donald Robert Erickson, Kalamazoo, Michigan, U.S.A. Filed March 27, 1947—Issued May 9, 1950.

The method of producing coated paper of the type having a base and a printing surface consisting of a continuous film of filler interspersed in binder by means of which the filler is retained on the base comprising completely covering the face of a paper with a continuous viscous coating consisting essentially of 100 parts by weight of filler dispersed in a solution in aqueous hydroxide of from 6 to 10 parts by weight of binder consisting essentially of water-insoluble hydroxy ethyl cellulose and immediately after application of said viscous coating precipitating said hydroxy ethyl cellulose from solution to bind said filler to said base and to form on said base a continuous film of said filler interspersed in said hydroxy ethyl cellulose by ion interchange between the sodium hydroxide and ammonium sulphate in water solution by applying a water solution of ammonium sulphate to said viscous coating whereby said hydroxy ethyl cellulose is precipitated before substantial drying of said viscous coating and prior to substantial penetration of the base by said viscous coating and then drying the paper with the coating in contact with a smooth surface.

*464,923 — Logging Block.* Paul E. Kenney, Portland, Oregon, U.S.A. Filed January 31, 1949—Issued May 9, 1950.

A crosshead and co-operating shackle for a logging block to be pin connected between upstanding ears on opposite sides of the block, comprising a generally channel shaped section crosshead member provided with pin holes adapted to register with similarly placed pinholes in block ears, a co-operating shackle adapted to enter the channel with its ends being provided with like spaced pinholes, the said shackle and crosshead having lugs integrally formed on each and in engagement so that when one pin is pulled from the assembly of block, crosshead and shackle and the shackle is tipped up, the crosshead will normally follow, preventing opening of the shackle, and the said crosshead pinholes being elliptically shaped so that the crosshead may be manually moved to slip the said lugs out of engagement, to open the shackle after predetermined joint movement.




*464,943—Process and Apparatus for Continuous After-Treatment of Disintegrated Fibrous Material.* Leif Gloersen, Karhula, Finland, and Johan C. F. C. Richter, Karlstad, Sweden, assignors to Aktiebolaget Kamyr, Karlstad, Sweden. Filed November 6, 1947 — Issued May 9, 1950.

A process for continuous after-treatment of already disintegrated fibrous material, so-called fibrous pulp, comprising mixing fibrous pulp with digesting liquor and feeding it continuously into a container, stirring the mixture in said container, maintaining pressure therein and feeding steam directly thereinto so as to heat the mixture therein to digesting temperature above 100 centigrades, transferring the heated fibrous pulp continuously from said container to a vertical heat-insulated reaction container in direct communication therewith, passing the pulp in said latter container quietly downwards therethrough without stirring or further supply of heat or chemicals and finally drawing off treated pulp therefrom.

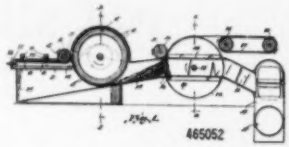
A process for continuous after-treatment of already disintegrated fibrous material, so-called fibrous pulp, comprising mixing fibrous pulp with digesting liquor to a fiber concentration less than 12 per cent, pressing digesting liquor off from the resulting mixture and feeding the pulp thus concentrated continuously into a container, stirring the mixture in said container, maintaining pressure therein and feeding steam directly thereinto so as to heat the mixture therein to digesting temperature above 100 centigrades, transferring the heated fibrous pulp continuously from said container to a vertical heat-insulated reaction container in direct communication therewith, passing the pulp in said latter container quietly downwards therethrough without stirring or further supply of heat or chemicals and finally drawing off treated pulp therefrom.

*465,001—Amino-Aldehyde Adhesives.* Clarence F. Van Epps, Lockport, New York, U.S.A., assignor to Luacks, Ltd., Vancouver, British Columbia, Canada, assignor to Monsanto (Canada) Limited, Montreal, Quebec, Canada. Filed March 12, 1946 — Issued May 9, 1950.

An aqueous, liquid, wheat-flour extended adhesive, comprising an amino-aldehyde composition selected from the group of urea/formaldehyde and melamine/formaldehyde condensation products and a water-soluble bisulphite in concentration of about 1 to about 6 per cent by weight of wheat-flour, said adhesive having a pH of between about 2.5 to about 6.0.

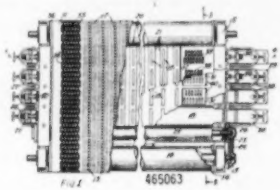
An aqueous, liquid wheat-flour extended adhesive, comprising an amino-aldehyde composition selected from the group consisting of urea/formaldehyde and melamine/formaldehyde condensation products and sodium bisulphite in concentration of about 1 to about 6 per cent by weight of the wheat-flour, said adhesive having a pH of between about 2.5 to about 6.0.

*465,052 — Fibre Web Forming Machine and Method and Web Formed Thereby.* Francis M. Buresh, Blandford Massachusetts, U.S.A. Filed April 10, 1947 — Issued May 16, 1950.




A machine of the kind described, comprising a lap support for unorganized fibrous material, a licker-in roll next to the support for licker-in action on said material, a rotary foraminous condenser spaced from the said roll, and a tunnel for receiving the material subsequent to the licker-in action by the roll and having a continuation extending diametrically through said condenser, to be intersected thereby, for the formation of the fibrous material exteriorly thereof in a continuous web.

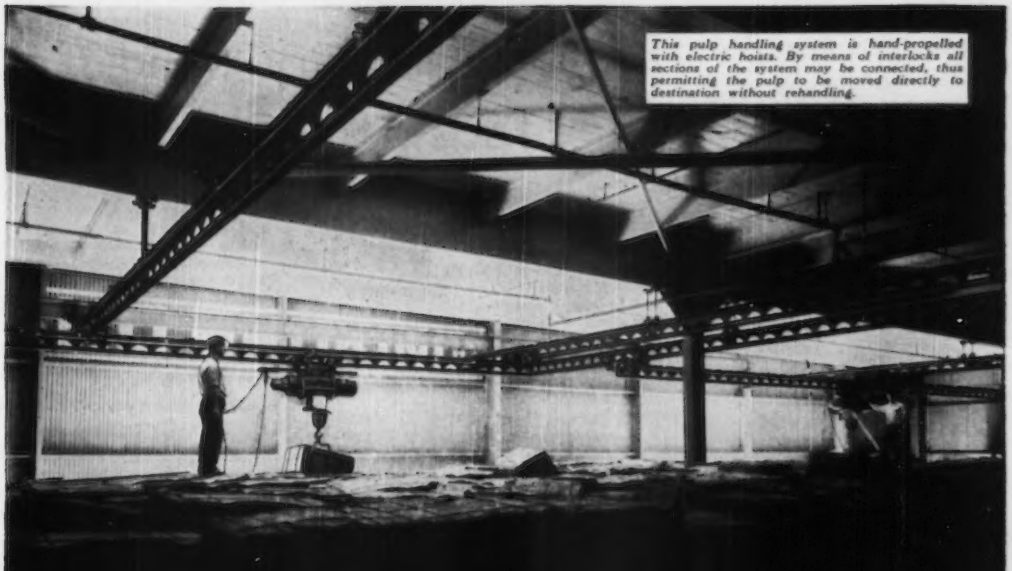
*465,063 — Paper-Making Machine.* James William Weston Evans, Clifton, near Manchester, County of Lancaster, England. Filed February 18, 1947 — Issued May 16, 1950.




For extracting water from webs of paper or pulp apparatus comprising a travelling pervious band for carrying the web to be treated, an endless rubber belt supporting said band and having grooves and perforations therein, one of the two elements aforesaid being driven and acting to carry forward the other of said elements, at least one open-topped stationary suction box adapted to support the operative run of said belt and to draw water therethrough from said web, a water tank, and a wetting roller mounted in said tank and serving to transfer water therefrom to the underside of the operative run of said belt before the latter reaches said suction box.

## Bulkley, Dunton Names Ferrer

NEW YORK—Bulkley, Dunton Paper Co., S.A., announces the appointment of A. M. Ferrer as sales manager in charge of its Latin American markets. Mr. Ferrer is well known to the export paper trade, having previously served for many years in a similar capacity with American Paper Exports and Walker, Goulard, Plehn Co., Inc.



*This pulp handling system is hand-propelled with electric hoists. By means of interlocks all sections of the system may be connected, thus permitting the pulp to be moved directly to destination without rehandling.*

# HANDLE PULP the OVERHEAD WAY
# FAST! ECONOMICAL! SAFE!

*Bales of pulp can be handled in fast time with this patented Cleveland Tramrail screw grab and overhead carrier system. Motor-driven screws work their way into the bales to hold them securely during handling. Sizeable savings are being effected with this equipment in several recent installations through reduction in handling cost and more efficient use of storage area. In one 5000 ton warehouse bales are piled 45 feet high with one unit as illustrated without operator leaving cab.*

More pulp can be handled in less time with a Cleveland Tramrail overhead system. The usual hard manual work can be greatly eased and safety bettered. Costs can be reduced considerably.

Cleveland Tramrail is built for hand or electric operation. The pulp storage room shown above makes use of easy rolling hand-propelled cranes equipped with electric hoists that do the heavy lifting. Where a completely electrified system is desired, a motor-driven screw-type grab as illustrated at left will speed handling tremendously.

When pulp is transported overhead, all troubles of floor interference are eliminated. Aisles need not be provided and the space thus saved can be used for storage. Bales of pulp can be piled higher. Thus storage capacity of a room can be increased greatly.

**GET THIS BOOK!**

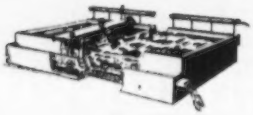
BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy.

**CLEVELAND TRAMRAIL DIVISION**
THE CLEVELAND CRANE & ENGINEERING CO.
7118 E. 287TH ST. WICKLIFFE, OHIO

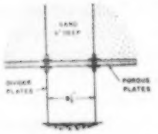
**CLEVELAND TRAMRAIL**
**OVERHEAD MATERIALS HANDLING EQUIPMENT**

*Don't jump! There's still hope! Try...*

**HARDINGE AUTOMATIC BACKWASH SAND FILTERS!**



**For Paper Mill WATER SUPPLY or "WHITE WATER"**



***Section of Sand Bed Showing Compartments***

Here is a sand filter which cleans itself—automatically—with no interruption whatever to the filtering operation. No shut-down or change-over is necessary while cleaning is in progress.

The secret lies in its special, compartmented filter bed and traveling backwash mechanism which automatically cleans one compartment at a time — on a pre-determined time cycle or with increase in head pressure.

And . . . it's highly efficient, removing 75% to 80% of the suspended solids—90% or better if chemicals are added.

May be used for paper plant supply water or for recovery of fibre and filler from "white water." Write for Bulletin 46-14.

**HARDINGE**
COMPANY INCORPORATED
YORK, PENNSYLVANIA — 240 Arch St. • Main Office and Works
NEW YORK 17—122 E. 42nd St. • 205 W. Wacker Drive—CHICAGO 6
SAN FRANCISCO 11—24 California St. • 200 Bay St.—TORONTO 1

# Paper Industry In India Facts At A Glance

**By Our Own Correspondent**

## History

1825: The first mill starts up.
1882: Manufacturing by mechanical means commences at Titaghur Paper Mills.
1882 to 1914: The industry has hard days until World War I breaks out and brings with it acute shortage of paper in the country.
1918: Indian Paper Pulp Co. starts production of bamboo pulp and paper.
1925: Tariff Board gives protection to the industry — a duty of one anna (1c approx.) is levied per pound on imported paper.
1942: The Government regulates the industry with its Paper Control Order by which the industry is to part with 90 percent of its production at a fixed price for military use.
1944: Production rises from 53,000 tons (1936-37) to 100,000 tons (1943-44).
1947: Protection import duty is abolished.
1949: Despite the great local demand, a steady decline in paper production is observed. Industry suffers hardship, appeals to the government. Tariff Board recommends high prices. No favorable action is taken to date.

## Yesterday, Today and Tomorrow

Table I indicates the production trend:

**TABLE I***

| Period | Volume of output (in tons) | as % of installed capacity |
|---|---|---|
| 1946 | 103,993 | 96.3 |
| 1947 | 93,090 | 84.6 |
| 1948 | 97,905 | 89.0 |
| 1949 | 103,194 | 93.8 |
| 1950 (Jan.) | 8,287 | 90.4 |
| (Feb.) | 8,460 | 92.3 |

* Figures provided by the AMIO.

According to the estimate of the Government Panel on paper, the anticipated consumption is as indicated in Table II and the anticipated indigenous production is as indicated in Table III.

## Thorns on the Way

This basic industry in India has many obstacles to overcome:

1. The manufacturing expenses have risen because of the partition of India and the devaluation, since Eastern Pakistan is the main source of raw materials.

2. The salaries and wages went up from 12.4 percent in 1945 to 20.3 percent in 1947.

3. A non-cooperative attitude is evident on the part of both labor and management.

4. The renovation program has been either shelved or not developed at all by the component units.

5. Building up of reserves in the industry is slow since the dividends to ordinary shareholders range all the way from 20 percent to 90 percent.

6. The Government is too busy with the country's immediate problems to give the industry the needed attention.

## Sidelights

India now has 16 paper mills and 11 board mills.

The installed capacity for all sorts of paper and boards is 1,300,000 tons.

The capital invested is £6,000,000 (approx.).

The per capita consumption works out to 1.4 pound.

The principal raw materials are bamboo and "sabar" grass grown in Bengal, S. W. India, United Provinces, Bihar, Orissa, and Punjab.

**TABLE II**
ANTICIPATED CONSUMPTION

| Type of produce | Anticipated annual consumption (in tons) 1951 | 1956 |
|---|---|---|
| Writing and printing paper including art, chromo, sterreo, badam, etc. | 125,000 | 200,000 |
| Cheap wrapping paper (including old newspaper) | 60,000 | 60,000 |
| Kraft paper | 20,000 | 40,000 |
| Sand paper | 7,000 | 10,000 |
| Crease proof paper including vegetable parchment, etc. | 2,000 | 4,000 |
| Miscellaneous type excluding cellophane* | 6,000 | 8,000 |
| Newsprint | 60,000 | 100,000 |
| Total | 280,000 | 422,000 |

The paper (all sorts) imported in 1949 amounts to 86,000 tons and the chief exporter to India today is and for a long time has been Sweden.

The domestic paper sells at a controlled price of 12.5c per pound and the imported paper at 20.0c per pound.

Paper making was a flourishing cottage industry in India even in the latter part of the 18th century. It was revived in the 20th by Gandhiji to give economic relief to the millions who are unemployed for the best part of the year. *Gram Udyoga Patrika* (The Journal of Cottage Industry) is today printed on handmade paper.

**TABLE III**

ANTICIPATED INDIGENOUS PRODUCTION

| Type of produce | approx. present indigenous prodn. 1950 | anticipated annual indigenous prodn. 1951 | 1956 | Bal. to be met by imports 1951 | 1956 |
|---|---|---|---|---|---|
| Writing and printing paper including etc. | 75,000 | 110,000 | 200,000 | 15,000 | nil |
| Cheap wrapping paper | nil | 24,000 | 50,000 | 36,000 | 10,000 |
| Kraft paper | 10,000 | 20,000 | 40,000 | nil | nil |
| Sand paper | very small | 7,000 | 10,000 | nil | nil |
| Grease proof etc. | nil | 2,000 | 4,000 | nil | nil |
| Misc. types* | 2,500 | 6,000 | 8,000 | nil | nil |
| Newsprint | nil | 20,000 | 40,000 | 40,000 | 60,000 |
| Total | | 189,000 | 352,000 | 91,000 | 70,000 |

* Includes match paper, teleprinter, toilet, target, cigarette, tissue paper, etc.

## Italian Hardboard Production

Italian hardboard production dates back to 1938 when the first two mills were erected.

The first one, following the Swedish Asplund's defibrator system, belongs to the S/A Faesite in Faè amid the Alps of Cadore and, the second one, following the American Masonite wood explosion system, belonging to the S/A Feltrinelli-Masonite, lies in Bolzano, in the Central Italian Alps.

Both mills use as raw material mostly fir and pine slabs as well as saw mill wastes. They have an annual output of about 6-7000 tons each of wood fiber hardboard, but within a few months, the output of the Italian Masonite plant will be doubled by the addition of a second press unit.

A third wood fiber board mill existed in the eastern Italian region between Trieste and Fiume in Villa del Nevoso, but this mill practically completed in 1945 by the S/A Fallersa of Trieste, lies now in the territory ceeded by the peace treaty to Yugoslavia. This mill with an estimated capacity of about 5000 tons annually, was following the semi-chemical cooking process.

Two other small mills, the S/A Xilon in Tresigallo and the S/A Castex in Capua, use the semi-chemical cooking processes entirely and produce about 2500 tons hardboard annually, the first one utilizing the hempstraw wastes of the Aemilian hempcrop and the second one, the tannin's exhausted chestnut chips of Campania.

A new mill for the utilization of veneer wastes will soon start the production of "Fibrosil" - hardboards following the Behr process in Pisogne near Brescia in Northern Italy. The new "Fibrosil" mill, attached to the S/A Palini's wood-working factory in Pisogne, will have an annual capacity of about 5000 cubic meters and Dr. Ing. Attilio Pecorari, already responsible for the erection and management of the Italian Masonite plant as well as expert for the wood fiber board industry, is consulting engineer.

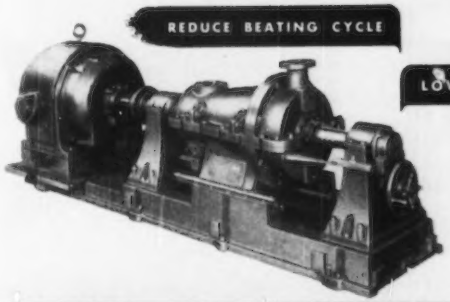

SAVE ON POWER

IMPROVE STOCK CONTROL

CUT OR HYDRATE

REDUCE BEATING CYCLE

LOWER MAINTENANCE



WITH THE JONES HIGH-SPEED REFINER

**This is only part of the record of this "mighty mite of stock preparation," this "Jack-of-all-trades" Refiner.**

**Among the more than 500 now in use:**

***In a glassine mill, one 60 H.P. High-Speed Refiner eliminated the need for three lava filled beaters.***

***In another, two 60 H.P. High-Speed Refiners have replaced one 200 H.P. Jordan — and resulted in improved formation of the sheet.***

***On high-quality ledger, one 40 H.P. High-Speed Refiner refines stock at a range of 300 to 550 lbs. per hour (and replaces a 80-100 H.P. unit).***

**These are only a few of the applications possible — on rag furnishes, book papers, ground wood screenings, condenser tissue, waste paper for board.**

**Write for Bulletin EDJ-1011A or ask your Jones representative how the Jones High-Speed Refiner can produce savings for you.**

H-2

**Features**

- **Small Floor Space** — 9' 2½", including motor base.
- **Direct Drive** — motor base is integral part of main casting.
- **Sliding Shell** — eliminates endwise motion of plug.
- **Split Shell** — makes inspection or refilling easy.
- **Adjusting Mechanism** — handwheel and scale simplify adjustment.
- **Clean-out Doors** — built in sand and junk trap easily accessible.

ED Jones

*E. D. Jones & Sons Company, Pittsfield, Mass.*

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

## Good Growth From Well-Stocked Longleaf Stands

F. R. Smith

If properly managed, well-stocked stands of second-growth longleaf pine can approach, in about 70 years, the volume of timber that the virgin stands laid on in two centuries.

This is suggested by a study in a 35-year-old longleaf forest on a good site in south Mississippi. The stand, which seeded in about 1912, was entirely without protection until 1923. Since then the area has been burned by two wildfires and grazed intermittently by cattle. In 1928 many of the trees had not yet started height growth, and few contained merchantable products. Stocking averaged 684 trees per acre.

In 1947 there were 488 trees per acre: most of them were of pulpwood size, many were 9″ d.b.h., and the largest were 14″. Those in the main crown canopy averaged nearly 70 feet tall. Most of the trees that died before 1947 were too small to be merchantable. The merchantable trees (about 400 per acre) had averaged 2 cords of growth per acre annually since 1938. Total volume in such trees was 40 cords of unpeeled wood per acre. If each tree had been sold for the products it was best suited for (mostly poles or pulpwood), the stumpage receipts would have been about $100 per acre.

The first thinning was made in 1947. Up to that time, growth had been satisfactory and competition had produced smooth, straight stems. Henceforth thinnings will be made about every 5 years, and 75 or 100 per acre of the best trees will be held for final harvest at about 70 years. In 1947 the stand averaged 8,000 bd. ft. (Int. ¼-inch rule) per acre in trees 9″ d.b.h. and larger. With thinnings, growth in the next 35 years should be at least 400 bd. ft. per acre per year. If so, the total yield for the rotation will be about 22,000 bd. ft. per acre—an amount that compares well with the better original stands.

## Accuracy of Ring Counts on Increment Cores

J. L. Burkle

In some hardwood species, growth rings are hard to distinguish and accurate ring counts on increment cores are difficult to make under field conditions. A check of several hundred such cores, however, indicates that field estimates of 10-year radial growth may be made with acceptable accuracy.

The cores were gathered and examined by Forest Survey cruising teams. In the office, they were sliced until translucent and reexamined under a strong light. There were 166 sweetgum cores and about 53 each of cottonwood, willow, the black gums, and the maples.

The test disclosed that 10-year radial growth of the black gums was overestimated 10%. Sweetgum growth was overestimated 4%, and the maples were underestimated 6%. In cottonwood and willow no significant differences were found between average office and field estimates. The chief sources of error appeared to be (1) failure to distinguish all of the rings in the black gums and, to a lesser extent, in sweetgum; and (2) a tendency to be misled by false rings in the maples and willow.

For the 380 cores checked, the average field determination of 10-year radial growth was only 2% over the office determination. Ring counts for species with distinct rings, such as the oaks, are unquestionably more accurate than this.

## Quick Returns from Releasing Pine

W. F. Mann, Jr.

A study on the Crossett Experimental Forest has demonstrated that early and substantial returns are obtained from releasing pine reproduction overtopped by inferior hardwoods.

Before treatment, the study area was similar to much of the upland

**New R-C Bulletin for Paper Mills...**

Bulletin 50-B-13 gives you complete, up-to-date details on Roots-Connersville's wide line of vacuum pumps for paper mill service. It includes data on construction, capacities and characteristic curves—it will help you select vacuum pumps for any application.

Send for this new Bulletin 50-B-13 and ask us for an engineering analysis of how R-C Vacuum Pumps can be applied in your mill.

ROOTS-CONNERSVILLE BLOWER CORPORATION
506 Garden Avenue, Connersville, Indiana

ROOTS-CONNERSVILLE
BLOWER BUILDERS SINCE 1854
ONE OF THE DRESSER INDUSTRIES

mixed pine-hardwood forest west of the Mississippi River. Low-grade hardwoods ranging from 1″ to 20″ d.b.h. and averaging about 4″ were suppressing 1,200 pine seedlings per acre, most of them less than 7 ft. high. The study, started in 1939, tested three degrees of release: Treatment 1 removed hardwoods 6″ d.b.h. and over, treatment 2 removed hardwoods 2″ d.b.h. and over, and treatment 3 removed hardwoods down to 5 ft. tall. Only hardwoods overtopping or almost overtopping pine were treated.

In treatments 2 and 3, the pines developed so rapidly that they needed thinning in 1949—only 10 years after release. The stumpage value of the pines taken out in thinning appreciably exceeded the costs of hardwood removal (*see table 1*). Results in treatment 1 were unsatisfactory, as too few hardwoods were removed to release the pine. Although an operable cut of pine was impossible, this treatment was also thinned in 1949 to compare the returns with those from the other treatments.

TABLE 1

| Item (figures are per acre) | Treatment 1 | Treatment 2 | Treatment 3 |
|---|---|---|---|
| Hardwoods removed (number) | 15 | 136 | 431 |
| Removal costs, 1949 rates | $0.53 | $1.84 | $2.43 |
| Volume thinned, 1949 (cords) | .19 | 1.51 | 1.62 |
| Stumpage value of thinnings, at $2.00 per cord | $0.38 | $3.02 | $3.24 |
| Returns from thinning less treatment cost | −$0.15 | +$1.18 | +$0.81 |

The good pine stands now present on areas that received treatments 2 and 3 will furnish periodic cuts for 50 years or more.

Forest Service, U. S. Department of Agriculture, Southern Forest Experiment Station, New Orleans, La.

## Rayonier Appoints Holt

GRAYS HARBOR, Wash.—George A. Holt has been appointed assistant resident manager and general superintendent of the Grays Harbor division of Rayonier, Inc.

For several years Mr. Holt has been serving as general superintendent of operations at the Grays Harbor division and will continue to function in this capacity in addition to assuming the responsibilities of his new assignments as assistant resident manager.

## Roger's Employes Honor Silverstein

HARTFORD, Conn.—A surprise party was given May 23 for Saul M. Silverstein, president of Rogers Corp., Manchester, Conn., by over 100 employes, their wives and friends, in recognition of his 20 years with the company. Mr. Silverstein, who has headed the concern since 1943, was presented with an inscribed pair of binoculars and a $100 government bond.

PROVEN RESULTS! with

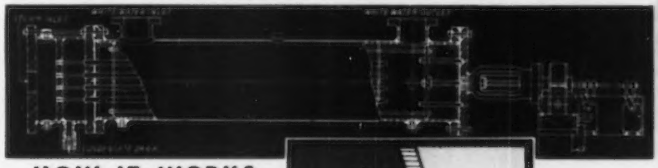
Paracoil Automatic SELF CLEANING

WHITE WATER HEATERS

3 years of operating installations have demonstrated these results . . .

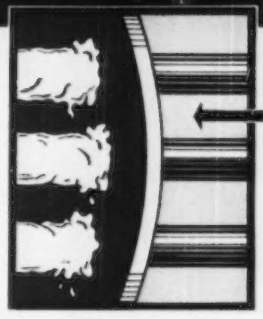
- Increased production capacity due to higher sustained white water temperatures
- Savings in make-up water due to closed condensate system
- Elimination of heater outage time and attendant cleaning labor charges

Designed to the specific PH requirements of the individual mill.



HOW IT WORKS

The transverse heater baffles, which also serve as tube surface cleaners, are connected by tie rods to the yoke plate, which in turn is connected to the drive mechanism at the right. The time controls close the motor circuit at predetermined intervals. The yoke plate moves each baffle longitudinally along the tubes, until the drive mechanism reverses the action and returns the baffles to their original position.



BAFFLES MOVE FORWARD AND BACKWARD LEAVING TUBES CLEAN AS A WHISTLE

Available in models for either manual, electric motor or hydraulic piston drive. Automatic types operate on adjustable predetermined time schedules.

Every Inch of Every Tube Is Thoroughly Cleaned At Every Cycle!

100% Heater Capacity Available At All Times!

Standby Heating Equipment No Longer Needed!

Old Style Heater Cleaning Costs Forever Banished!

DAVIS ENGINEERING

CORPORATION

1064 East Grand St., Elizabeth 4, N. J. • 30 Rockefeller Plaza, New York 20

## SUPPLIERS

*R. S. Aries & Associates,* engineers, 400 Madison avenue, New York 17, N. Y., has established a department to handle process evaluation, economic surveys, pilot plant tests and plant design for both hard and soft wallboards. No particular process is favored by the Aries organization, who will provide an impartial service to industry, recommending processes based on minimum cost and product specifications alone.

The pilot plant operated by R. S. Aries & Associates can produce large samples of wallboards from many types of wastes, such as sawdust, shavings, bagasse, annual grasses and agricultural residues.

*H. Blacker Printing Inks, Inc.,* 304 Lock street, Cincinnati 1, Ohio, announces the appointment of Stanley M. Cash as director of its development and research department, effective at once.

*Gates Engineering Co.,* New Castle, Del., has announced the appointment of L. J. Amsdell as director of the Pipe Joint Division of the corporation.

*General Electric's* Apparatus Department Atlantic District has announced the following appointments: F. L. Headley, assistant manager of the Pittsburgh Apparatus Sales Office, who will later replace the present office manager, Joseph Bryan, upon his retirement; N. L. Whitecotton as manager of the Philadelphia Apparatus Sales Office, succeeding Mr. Headley in that position; F. I. Kittredge as manager of the Philadelphia Apparatus Sales Office's Industrial Customer Division; and W. C. Mason as Atlantic District manager of the Agency and Resale Division, with headquarters at Philadelphia. All appointments were effective June 1.

*Stadler, Hurter & Co.,* consulting engineers, 609 Drummond Building, Montreal, announce the formation of an affiliate firm operating under the name of Beauchemin & Hurter with offices also in the Drummond Building.

### Pfeifer Heads Lukens Sales Office In Boston

**Herbert G. Austin, district manager of sales of the Boston office of Lukens Steel Co., will retire from active participation in sales work on June 10. Austin joined the organization in 1927 as assistant district manager of sales of the Boston office. Edmund Pfeifer, (right) now assistant district manager of sales at Boston, will assume the duties of district manager of sales there, effective June 10.**

### Fifty-Year Men Awarded at Farrel-Birmingham

**The presentation of five 50-year service awards at one time is unique in the annals of Farrel-Birmingham Co., Inc., Ansonia, Conn., and it is an event that, perhaps, has never been duplicated in any firm of comparable size throughout the entire country.**

**In the picture, left to right, are Henry T. King, Roderick R. Hazard, Christopher C. Harris, Joseph B. Wolfe, and Carl F. Schnuck. The latter is receiving his diamond-studded, 50-year service pin from Franklin Farrel, Jr., former Chairman of the Farrel-Birmingham Board of Directors and grandson of Almon Farrel, founder of the century-old company.**

*The Pennsylvania Salt Mfg. Co.* announced the opening of a new District Sales Office on June 1 to serve industrial customers of Detroit and southern Michigan.

Harry G. Potts, district sales manager of Pennsalt's Heavy Chemicals Department, will be in charge. The office is at 1114 Buhl Building, 535 Griswold street, Detroit. Also making their headquarters there will be W. B. Adam, Heavy Chemicals sales representative, and Willis J. Stoddard of the Special Chemicals Department.

*The United States Testing Co., Inc.,* announces the recent installation of an electron microscope. This is another step in the company's program of providing the finest scientific tools for the evaluation of the problems of industry. Through this program of advancement, industry will derive the benefits of knowledge obtained, at nominal cost, heretofore unobtainable with the finest light microscope.

*Lincoln T. Work,* consulting engineer, who has been operating from an office in Maplewood, N. J., since severance with Powdered Material Research Laboratories in Cambridge, now has office space with Singmaster & Breyer, Room 2118, Graybar Building, 420 Lexington avenue, New York 17, N. Y.

### Vacation Period for Waldron Plant

NEW BRUNSWICK, N. J.—The John Waldron Corp., manufacturers of paper and textile converting machines and flexible couplings, has announced that its plant will be closed for the annual vacation period of two weeks from June 30 through July 17.

### Brostoff Severs Flett Connection

CHICAGO — Harry M. Brostoff announces that he is no longer representing the James Flett Organization in any capacity whatsoever, legal or otherwise. He was formerly vice-president and general counsel of the James Flett Organization, but on April 1, 1949, resigned his position as vice-president, continuing thereafter to act solely as general counsel for the organization.

Mr. Brostoff is now engaged in the general practice of law in Chicago.

### Dixon Joins Stowe-Woodward

KALAMAZOO, Mich. — Jack Dixon is returning to this city in the very near future to take up his new duties as representative of Stowe-Woodward in the middle west. Dixon formerly represented R. T. Vanderbilt in this territory.

## CONVERTERS

### Corrugated Container Div. Changes

NEW YORK—R. Carl Chandler, formerly sales representative in the Southeastern territory, has been appointed sales manager of the Trenton plant, of the Corrugated Div. of Union Bag & Paper Corp. He succeeds Roy W. Williams who announces that, while he will assume a slightly less active role, he will continue with the company on a consulting and special assignment basis.

John W. Butler, three years with the company, has been promoted to southeastern district sales manager with headquarters in Atlanta, Ga. He will be assisted by Frank P. Grimes, former sales representative in the Chicago area.

Robert B. Graves, formerly located in Harrisburg, Pa., has been appointed to a special sales assignment with headquarters in the company's New York office. He will however, still cover his Central Pennsylvania sales territory.

Raymond C. Bowers has joined the field sales staff in the middle west. Prior to joining the Union organization, Mr. Bowers had over 17 years experience in both corrugated packaging development work and selling.

### Waxide Names Fisher

KANSAS CITY, Mo. — Waxide Paper Co. has announced the election of Lloyd L. Fisher as vice-president in charge of sales.

**FLAVEL W. PAYNE**

### New England Mgr. of Sealright

FULTON, N. Y.—Sealright Co., Inc. has appointed Flavel W. Payne of New Haven as New England manager for the company. Mr. Payne has been Sealright sales representative in Connecticut for eleven years.

### Milprint Starts Construction

MILWAUKEE, Wis. — Construction was started last week on the big new plant to house all Milwaukee operations of Milprint, Inc., printing and packaging material firm, it was announced May 13 by William Heller, president.

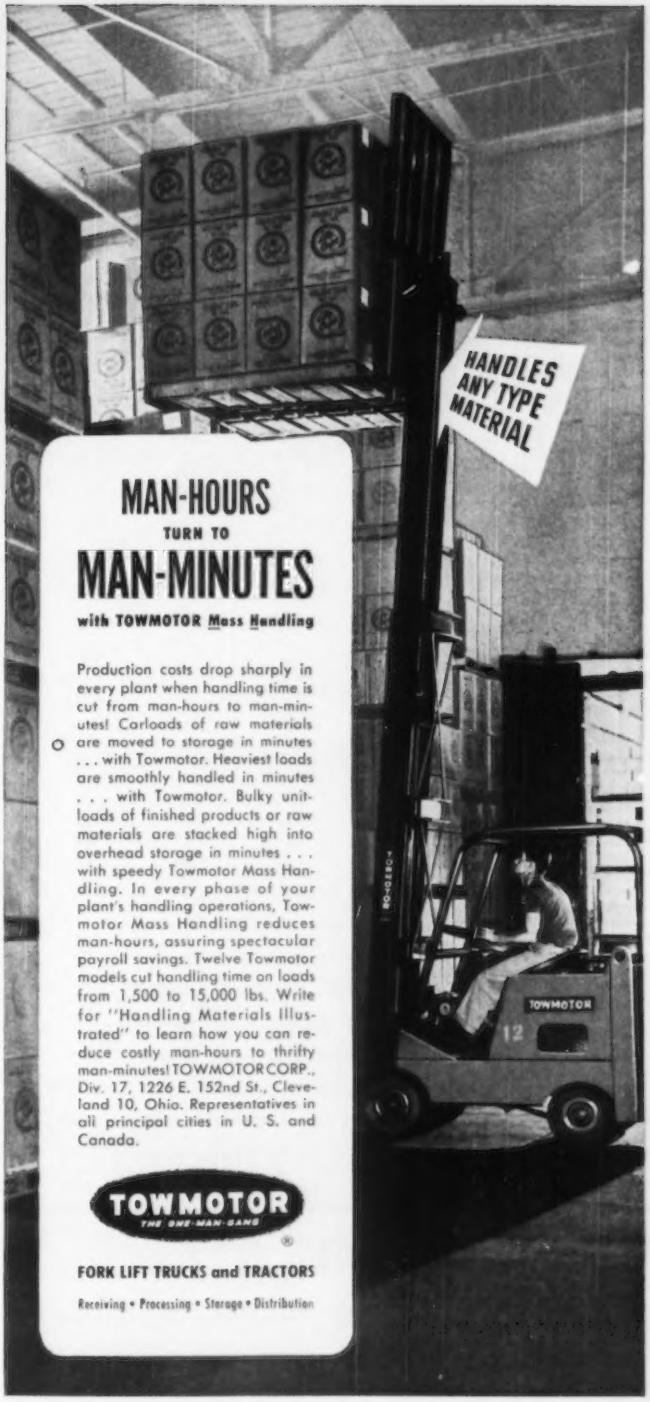
The factory and adjoining office building will be on a 22 acre tract between N. Richards and N. Holton streets, two blocks north of W. Capitol drive. The tract is large enough to permit triple expansion of the new buildings, which eventually may be necessary, Heller indicated.

The building permit indicated a construction cost of $1,500,000. The one story brick factory building, 462 x 603 feet, will have 280,000 square feet of floor space, and the two story office, 100 x 260 feet, will have 52,000 square feet, for a total of 332,000 square feet. An employes cafeteria will be one of the features. Klug and Smith Co. are the engineers and contractors.

Completion of the new quarters is expected by March 1, 1951. A North Western road spur track will provide rail service.

### Dixie Cup Canadian Appointments

OTTAWA—Dixie Cup (Canada) Ltd., Brampton, Ont., has named F. E. Piercy, Ontario district sales manager; J. J. Kennedy, Western Canada representative; J. R. Wilman, Western Ontario representative.



HANDLES ANY TYPE MATERIAL
MAN-HOURS
TURN TO
MAN-MINUTES
with TOWMOTOR Mass Handling
Production costs drop sharply in every plant when handling time is cut from man-hours to man-minutes! Carloads of raw materials are moved to storage in minutes . . . with Towmotor. Heaviest loads are smoothly handled in minutes . . . with Towmotor. Bulky unit-loads of finished products or raw materials are stacked high into overhead storage in minutes . . . with speedy Towmotor Mass Handling. In every phase of your plant's handling operations, Towmotor Mass Handling reduces man-hours, assuring spectacular payroll savings. Twelve Towmotor models cut handling time on loads from 1,500 to 15,000 lbs. Write for "Handling Materials Illustrated" to learn how you can reduce costly man-hours to thrifty man-minutes! TOWMOTOR CORP., Div. 17, 1226 E. 152nd St., Cleveland 10, Ohio. Representatives in all principal cities in U. S. and Canada.
TOWMOTOR
THE ONE-MAN GANG
FORK LIFT TRUCKS and TRACTORS
Receiving • Processing • Storage • Distribution
TOWMOTOR
12

*Ask to see the 30-minute Towmotor movie, "THE ONE MAN GANG" in your office. Shows how leading industries cut handling costs.*

# FINANCIAL RECORD

| PREFERRED STOCKS | Per Share Earnings: Calendar Year 1949 | Per Share Earnings: 12 Mo. to Approx. 3/31/50 | Indic. Annual Divid. Rate | June 6 Approx. Market Price |
|---|---|---|---|---|
| Armstrong Corp Co. $3.75 Cum. | $40.95* | $ — | $3.75 | $103⅝ |
| Armstrong Cork Co. $4.00 Cum. Conv. | 40.95* | — | 4.00 | 116⅝ |
| Celotex Corp. 5% Cum. | 6.80c | — | 1.00 | 16½ |
| Champion Paper & Fibre $4.50 Cum. | 60.09f | — | 4.50 | 104½ |
| Container Corp. of Amer. 4% Cum. | 89.52 | $92.76 | 4.00 | 105½ |
| Crown Zellerbach $4.20 Cum. | 54.38c | — | 4.20 | 104¾ |
| Dixie Cup Co. $2.50 Cum. Conv. Cl. A | 10.93 | 11.41 | 2.50 | 55½ |
| Flintkote Co. $4 Cum. | 62.70 | 65.47 | 4.00 | 107½ |
| Robert Gair Co., Inc. 6% Cum. | 11.48 | 8.49 | 1.20 | 18⅛ |
| International Paper Co. $4 Cum. | 224.55 | 235.34 | 4.00 | 108 |
| Kimberly Clark Corp. 4½% Cum. | 85.27 | 99.12 | 4.50 | 107½ |
| Kimberly Clark Corp. 4% Cum. Conv. 2nd | 50.65* | 58.80 | 4.00 | 130¼ |
| MacAndrews & Forbes 6% Cum. | 61.59 | 61.09 | 6.00 | 140 |
| Mead Corp. 4¼% Cum. | 51.37 | 53.61e | 4.25 | 89½ |
| Mead Corp. 4% Cum. Conv. 2nd | 21.35* | 22.62*e | 2.00 | 47⅛ |
| Paraffine Cos. Inc. 4% Cum. Conv. | 56.46 | 47.70 | 4.00 | 100½ |
| Rayonier Inc. $2 Cum. | 9.54 | 10.03 | 2.00 | 34½ |
| St. Regis Paper Co. 4.40% 1st A | 30.74 | 30.19 | 4.40 | 85⅛ |
| Scott Paper Co. $3.40 Cum. | 51.15* | 56.23* | 3.40 | 100½ |
| Scott Paper Co. $4.00 Cum. | 51.15* | 56.23* | 4.00 | 108½ |
| Sutherland Paper 4¼% Conv. | 46.92 | 50.62 | 4.25 | 110⅞ |
| U. S. Gypsum Co. 7% Cum. | 283.37 | 300.73 | 7.00 | 185½ |
| United Wallpaper Inc. 4% Cum. Conv. | 2.14 | (d)8.00 | 2.00 | 24⅜ |
| West Virginia Pulp & Paper 4½% Cum. | 61.28c | — | 4.50 | 109⅛ |
| **COMMON STOCKS** | | | | |
| APW Products Co. | (d)0.81 | (d)0.58 | — | 4⅛ |
| American Writing Paper Corp. | .04 | $0.15 | — | 6⅝ |
| Armstrong Cork Co. | 6.57 | — | $3.60 | 51⅝ |
| Celotex Corp. | 1.65c | — | 1.00 | 18½ |
| Certain-Teed Prods. Corp. | 2.84 | 3.00 | 1.00 | 17⅛ |
| Champion Paper & Fibre | 5.15f | — | 2.00 | 38⅝ |
| Congoleum Nairn Co. | 3.04 | — | 2.00 | 28 |
| Container Corp. of America | 8.46 | 8.77 | 4.00 | 49⅛ |
| Crown-Zellerbach | 6.02c | — | 2.00 | 36 |
| Dixie Cup Co. | 7.44 | 7.85 | 1.50 | 44½ |
| Eastern Corp. | 0.04 | 0.87 | — | 15⅜ |
| Flintkote Co. | 4.33 | 5.52 | 2.50 | 30 |
| Robert Gair Co., Inc. | 1.31f | 1.22f | 0.70 | 8⅜ |
| Great Northern Paper Co. | 4.87 | 4.19 | 2.80 | 40⅛ |
| International Paper Co. | 7.12 | 7.47 | 2.50 | 47¼ |
| Johns-Manville Corp. | 4.83 | 5.13 | 2.50 | 51⅝ |
| Kimberly Clark Corp. | 5.29 | 6.19 | 1.80 | 37½ |
| MacAndrews & Forbes Co. | 3.64 | 3.61 | 3.00 | 40⅛ |
| Marathon Corp. | 3.29c | 3.56g | 1.40 | 31⅜ |
| Mead Corp. | 4.10 | 4.28e | 1.60 | 22⅝ |
| National Container Corp. | 0.95 | 1.08 | 0.60 | 8 |
| Paraffine Cos. Inc. | 0.85 | 0.71 | 0.60 | 10⅛ |
| Rayonier, Inc. | 4.75 | 5.06 | 2.00 | 32½ |
| Ruberoid Co. | 8.72 | 9.44 | 3.25 | 59⅛ |
| St. Regis Paper Co. | 0.91 | 0.87 | 0.60 | 8⅞ |
| Scott Paper Co. | 6.07 | 6.65 | 3.60 | 92⅜ |
| Sutherland Paper Co. | 4.62 | 4.88 | 2.50 | 40⅛ |
| Union Bag & Paper Corp. | 5.01 | 5.12 | 2.25 | 32½ |
| United Board & Carton | (d)1.61b | (d)0.84g | — | 9 |
| U. S. Gypsum Co. | 13.51 | 14.35 | 9.00 | 131⅛ |
| United Wallpaper | (d)0.01 | (d)0.32 | — | 3⅜ |
| West Virginia Pulp & Paper | 8.58c | 9.37g | 3.00 | 53¾ |

(a) 12 months to approximately 2/4/50
(b) Year ended 11/13/49
(c) Year ended 1/31/50
(d) Deficit
(e) 12 months to 3/19/50
(f) 9 months to 12/31/49
(g) 12 months to approximately 4/30/50
(*) Earnings per combined preferred shares.
(†) Not including full earnings of Gair Co., Ltd. nor 60% interest of Robert Gair Co., Inc. in Southern Paperboard Corp.

*Great Lakes Paper Co., Ltd.*, has declared a dividend of 40 cents per share payable on the common stock June 30.

*Puget Sound Pulp & Timber Co.* declared a dividend of 25 cents a share on the common stock, payable June 30 to stockholders of record June 9, making a total of 50 cents a share paid or declared payable thus far this year.

*Nekoosa-Edwards Paper Co.* has voted a quarterly dividend of 25c a share, payable June 30, to stockholders of record June 15.

# MERCHANTS

## Doniger Forms Own Company

NEW YORK—Arthur Doniger, formerly manager of the pulp and paper division of P. L. Thomas & Co., announces the formation of his own company under the name of Arthur Doniger Paper Co., Inc., 350 Broadway, New York 13, N. Y.

## CHARLES RITTENHOUSE

### Rittenhouse Joins P. L. Thomas

NEW YORK—P. L. Thomas & Co., 122 West 30th street, New York City announce the appointment of Charles Rittenhouse to head their expanding pulp and paper division.

Formerly Far East manager of the Van Reekum Paper Co., Mr. Rittenhouse has a vast experience in the handling of the paper and pulp for import and export. His extensive travels to foreign markets have covered almost all of the world.

### Centralize Paper Procurement

NEW YORK — The Armed Forces of the United States added another link to the growing chain of single-service Government procurement with the assignment on March 15 of purchase responsibility for all Armed Forces paper supplies to the Army Quartermaster Corps.

This step completes centralization of procurement for all paper items which the New York Quartermaster Procurement Agency now buys for the Army, Navy (including the Marine Corps), Air Force, and foreign aid program.

Always a large buyer of paper products, the NYQMPA expended a peacetime high of $31,900,000 for Army and Air Force requirements in these commodities during the fiscal year 1949 (July 1948 through June 1949).

Current trends in paper buying for the Armed Services reflect some innovations adopted by the Armed Services since the outset of the war. During the war serious pulp shortages made it necessary to conserve or modify existing types of paper and barrier materials in order to compensate for conditions. Prevailing specifications had to be amended accordingly. The paper in-

dustry introduced new uses of paper and developed new methods of manufacture.

The multiwall paper shipping sack, for instance, became increasingly prominent during the war and has since been recognized as a satisfactory method of packaging. Made of combinations of four or five plies of paper, it has proven safer and more sanitary than cotton or burlap bags, particularly for the shipping of such items as sugar, flour, salt, or other foods and chemicals.

Other paper products, resulting from intensive wartime research conducted by manufacturers and the Research and Development Branch of the Quartermaster Corps for the purpose of developing new types and grades of products to serve urgently needed purposes, are today standard items purchased by NYQMPA. Prime consideration in such work is directed toward the effectiveness of the end purpose for which the item is intended.

Bond paper is an example. Features sought in such paper are good surface and sizing, attractive appearance, and ability to withstand erasures. Cover paper must have good folding qualities, sufficient bulk, and have a smooth but rough-appearing surface. The most frequently purchased cover paper for the Armed Services has an antique finish. Duplicator papers, both master and copy papers, require a high finish and smooth surface to enable easy transfer. Map paper must have excellent writing and erasure-resistant qualities, strong folding endurance, a high degree of imperviousness to moisture, and maximum wet strength.

With the easing somewhat of pulp shortages after 1947, the Quartermaster Corps has been able to concentrate on obtaining paper products of higher quality. Specifications have been revised in order to obtain better products, with little or no additional cost to the Government.

It is anticipated that the current policy of allowing a 90-day period between the making of an award and the first scheduled delivery date will further stimulate industry interest in selling to the QMC — particularly among small business firms which formerly encountered difficulty in meeting more rigid requirements.

Active participation of the paper industry in NYQMPA industrial mobilization planning activities is being sought through the establishment of a Quartermaster Association industry paper group. Paper manufacturers and suppliers will be invited to work with the Quartermaster Corps to develop and evaluate plans for the industry to meet any future emergency involving national defense. Like the commodity groups already established for other industries, assistance will also be desired for the research and development of new and improved products for future military use, as well as for the solution of current procurement problems.


Sea Suds

A MILD DETERGENT

FOR WASHING FELTS

Sea Suds, a superior all-purpose detergent, cleans faster and better, at less cost. It is an entirely different formula which contains no soap, forms no soap curd; leaves no scum. It is self-sudsing; is thoroughly soluble; requires no "booster"; contains no abrasives. It is extremely easy to rinse.

GAMLEN CHEMICAL COMPANY

1469 Spring Garden Avenue—Pittsburgh 12, Pa.

195 San Bruno Avenue—San Francisco 3, Calif.

665 Newark Avenue—Jersey City, N. J.

# PRICES

**The prices below reflect general market quotations at the mill level on the standard grades in which the normal volume of business is being done. Does not include occasional spot offerings.**

## NEW YORK

Delivered Ports

**Standard News,** per ton—

| | |
|---|---|
| Rolls, contract | $100.00/ — |
| Sheets | 115.00/ — |

F.o.b. Mills. Carload freight allowed, dock N. Y.

**Kraft—** per cwt., 40# base wgt.

| | |
|---|---|
| Standard Wrapping Rolls | $6.50/ — |
| No. 1 Wrapping Rolls | 7.25/ — |
| Standard Bag | 6.25/ — |

**Tissues—** per ream 24x36 (480) 10 lbs. 2500 lbs. or more

| | |
|---|---|
| Wh. No. 1 Frd. | $1.40 / 1.55 |
| Wh. No. 1 MG | 1.40 / |
| Wh. No. 1½ | 1.30 / 1.35 |
| Wh. No. 2 | 1.15 / 1.20 |
| Kraft Non-Tar | 1.25 / |
| White Non-Tar | 1.52½/ |

**Toilet—** per case of 100 rolls—1 M sheets.

| | |
|---|---|
| Unbleached 4½x4½ | $5.75/ — |
| Bleached 4½x4½ | 6.95/ — |
| Bleached 4½x5 | 8.80/ — |

Per Case of 50 rolls—2000 sheets

| | |
|---|---|
| Unbleached 4½x4½ | $5.75/ — |
| Bleached 4½x4½ | 6.80/ — |

Per Case of 100 rolls—1000 sheets.

Facial, 4½ x 5, 2 ply ..... $8.95/$9.45

**Paper Towels—** per case of 3750.

| | |
|---|---|
| Wh. Jr. M'tif'd 9½x9½ | $5.25 |
| Br. Sr. M'tif'd 10x12 | 3.60 |
| Br. Jr. M'tif'd 9½x9¼ | 3.10 |
| Br. Jr. Sgl. fold 10x10¼ | 3.15 |
| Blchd. 7½ x 11, 24/25 rolls | $3.95/$6.25 |

**Manila,** per cwt.

| | |
|---|---|
| No. 1 Jute Tag sheets* | $15.05/$17.50 |
| Reg. Jute M.F. 40-lb., sheets* | 13.50/ 15.50 |
| Wrapping Manila | 8.75/ 10.50 |
| Printing Manila | 10.00/ 11.00 |

* Less usual allowance for rolls.

## WORLD WOOD PULP MARKETS

**Second Quarter Contract Price, Per Short Air-Dry Ton**

| | Delivered, with varying freight allowance | | Full freight allowance‡ On dock Atlantic Ports | | |
|---|---|---|---|---|---|
| | U. S. | Canadian | Swedish | Finnish | Norwegian |
| Groundwood | $65.00/ — | $65.00/ — | $60.00/ 62.50* | | |
| Sideruns Pulping News | 65.00/ — | 65.00/ — | | | |
| Soda, Bleached | 115.00/ — | 115.00/ — | | | |
| Sulphate, Bleached | 118.00/126.00 | 126.00/ — | 125.00/128.00 | | Competitive |
| Sulphate, Unbl'd North'n | | 82.50/105.00 | 85.00/ — | 85.00/ — | |
| Sulphate, Unbl'd South'n | 82.50 /85.00 | | | | |
| Sulphite Blchd. (S'ftw'd) | 118.00/123.00 | 118.00/ — | 118.00/124.00 | 115.00/ — * | Competitive |
| Sulphite, Blchd. (H'dw'd) | 118.00/ — | | | | |
| Sulphite, Unbleached | 100.00/ — | 100.00/ — | 100.00/105.00 | 100.00/ — | |
| Sulphite, Unbl'd (Glassine) | 105.00/ — | 103.00/ — | 104.00/105.00 | | |

* On dock. ‡ Ex dock quotations average $5.00 lower.

**Third Quarter Indications, Per Short Air-Dry Ton**

| | | | |
|---|---|---|---|
| Sulphate, Bleached | $ | $131.00/ — | *130.00/136.00† |
| Sulphate, Unbl. Northn. | | 85.00/105.00 | *90.00/ 96.50† |
| Sulphate, Unbl. Southn. | | | |
| Sulphite, Blchd. (Sftwd.) | 123.00/ — | 125.00/ — | *125.00/128.00† |
| Sulphite, Unblchd. | | 107.00/ — | †107.00/ — |
| Sulphite, Unbl'd (Glassine) | | 110.00/ — | |
| Soda, Blchd. | 120.00/122.00 | 122.00/ — | |

* On dock. † Delivered.

**Gummed Tape—** per bdl., 500 bdls. or more.

| | |
|---|---|
| 60-lb. 600 ft. GSI | $ 5.25/$ 5.40 |
| 35-lb. 800 ft. GSI | 6.05 |
| 35-lb. 500 ft. GSI | 4.66 |
| 35-lb. 500 ft. GSO | 4.55 |

**Boards,** per ton—*

| | |
|---|---|
| Filled News | $67.50/$72.50 |
| Plain Chip | 65.00/ 70.00 |
| Blchd. Mla, L-d. Chip | 97.50/ — |
| White Pat. coated | 110.00/115.00 |
| Kraft Liners 42 lb. | 100.00/ |
| Kraft Corr. .009 | 105.00/ |
| Binders Boards | 110.00/116.00 |

* Base Prices per 10 tons. Less than 10 ton but over 3 tons, add $2.50; three tons or less, add $5.

## WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Spot offerings or special packings are not necessarily included. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.)

| | New York June 10 | Philadelphia June 12 | Boston June 10 | Chicago June 2 |
|---|---|---|---|---|
| No. 1 Mixed Paper | $9.00/ 11.00 | $10.00/ 12.00 | 6.50/ 7.00 | $10.00/ — |
| Boxboard Cuts | 8.00/ 9.00 | 8.00/ 9.00 | 7.00/ 9.00 | 13.00/ — |
| Mill Wrappers | 10.00/ 11.00 | 10.00/ 13.00 | 8.50/ 10.00 | 12.00/ — |
| No. 1 News | 9.00/ 11.00 | 6.00/ 8.00 | 8.50/ 10.50 | 14.00/ — |
| Over-issue News | 13.00/ 14.00 | 12.00/ 15.00 | 12.00/ 14.00 | 17.00/ — |
| Corrugated Containers | 19.00/ 21.00 | 25.00/ 27.00 | 16.50/ 19.00 | 18.00/ — |
| New Corrugated Cuts | 20.00/ 21.00 | 21.00/ 23.00 | 15.00/ 18.00 | 22.00/ — |
| Double Kraft Ld. Corr. Cuts | 35.00/ 37.00 | 32.00/ 37.00 | 36.50/ 40.00 | 42.00/ —* |
| Used Kraft Bags | 30.00/ 34.00 | 27.50/ 32.00 | 25.00/ 30.00 | 25.00/ — |
| No. 1 Brown Kraft Paper | 32.00/ 35.00 | 32.00/ 37.00 | 25.00/ 35.00 | 25.00/ — |
| Super Resorted Br. Kraft | 37.50/ 40.00 | 40.00/ 42.00 | 35.00/ 40.00 | 35.00/ — |
| New Br. Kraft Env. Cuts | 70.00/ 75.00 | 60.00/ 65.00 | 65.00/ 70.00 | 65.00/ — |
| New Br. Kraft Cuts | 55.00/ 60.00 | 50.00/ 52.00 | 50.00/ 55.00 | 60.00/ — |
| No. 1 Gdwd. Shvs. | 25.00/ 30.00 | 25.00/ 30.00 | 30.00/ 35.00 | 22.00/ — |
| White Newsblanks | 55.00/ 60.00 | 55.00/ 60.00 | 50.00/ 60.00 | 50.00/ — |
| No. 1 Flyleaf Shvs. | 27.50/ 30.00 | 28.00/ 32.00 | 40.00/ 50.00 | 35.00/ — |
| No. 1 Soft Wht. Shvs. | 65.00/ 70.00 | 65.00/ 75.00 | 65.00/ 70.00 | 65.00/ — |
| Super Soft Wht. Shvs. | 90.00/ 95.00 | 80.00/ 85.00 | 85.00/ 95.00 | 75.00/ — |
| Hd. Wht. Shvs. | 85.00/ 90.00 | 85.00/ 90.00 | 85.00/100.00 | 80.00/ — |
| Hd. Wht. Env. Cuts | 100.00/110.00 | 100.00/110.00 | 100.00/110.00 | 95.00/ — |
| New Manila Env. Cuts | 65.00/ 70.00 | 60.00/ 65.00 | 60.00/ 70.00 | 55.00/ — |
| Col. Tab Cards | 40.00/ 42.50 | 37.50/ 42.00 | 35.00/ 45.00 | 37.00/ — |
| Manila Tab Cards | 70.00/ 75.00 | 70.00/ 75.00 | 60.00/ 70.00 | 65.00/ — |
| No. 1 Mixed Ledger | 30.00/ 32.50 | 30.00/ 32.50 | 33.00/ 37.50 | 37.00/ — |
| White Ledger | 45.00/ 50.00 | 45.00/ 50.00 | 40.00/ 50.00 | 42.00/ — |
| Mixed Books & Mags. | 13.00/ 15.00 | 12.00/ 14.00 | 12.00/ — | 15.00/ — |
| No. 1 Rep'd Hvy. Books & Mags. | 25.00/ 30.00 | 22.00/ 25.00 | 23.00/ 28.00 | 25.00/ — |

* f.o.b. or delivered.

The following prices are representative distributors' resale prices:

**Rag Content Bonds and Ledgers—**
**White, 20 lb.**

| Bonds | 4 Ctns. |
|---|---|
| | per cwt. |
| 100% Rag Ex. No. 1 | $54.45/ 55.55 |
| 100% Rag | 47.05/ 47.55 |
| 75% Rag | 35.15/ 36.80 |
| 50% Rag | 29.40/ 30.35 |
| 25% Rag | 25.75/ 26.75 |

| Ledgers | 4 Ctns. |
|---|---|
| | per cwt. |
| 100% Rag Ex. No. 1 | $55.70/$57.60 |
| 100% Rag | 48.30/ 48.90 |
| 75% Rag | 37.65/ 38.05 |
| 50% Rag | 30.70/ 31.70 |
| 25% Rag | 27.15/ 28.05 |

**Sulphite Bonds and Ledgers**
White, 20 lb.

| Bonds | 4 Ctns. |
|---|---|
| | per cwt. |
| Watermarked | $16.75/$17.70 |
| Plain | 15.60/ 16.10 |

| Ledgers | 4 Ctns. |
|---|---|
| | per cwt. |
| Watermarked | $18.20/ 19.00 |
| Plain | 17.25/ 17.30 |

**White Book**

| Conversion Coated | Case |
|---|---|
| | per cwt. |
| No. 1 | $19.75/$21.15 |
| No. 2 | 19.25/ 19.90 |
| No. 3 | 17.75/ 19.15 |
| Machine Coated | |
| No. 1 | 16.40/ 16.65 |
| No. 2 | 14.40/ 15.15 |
| Uncoated | |
| No. 1 Antique (Watermarked) | 16.40/ 17.90 |
| Offset | 15.15/ 16.65 |
| A Grade E. F. | 15.50/ 15.65 |
| A Grade S. C. | 15.90/ 16.15 |
| B Grade E. F. | 14.90/ 15.15 |
| B Grade S. C. | 15.40/ 15.65 |

‡ Indicates a price change.

## Rag Market

**New Domestic Cotton Cuttings**
(Prices to Dealers, F.o.b. Ship. Pt.)

| | Per 100 lbs. |
|---|---|
| White Shirt | $10.50/ $11.25 |
| Unbleached Muslin | 10.50/ 11.25 |
| Light Silesias | 6.75/ 7.75 |
| White Back Blue Overalls | 6.00/ 6.50 |
| Blue Overalls | 4.50/ 5.00 |
| Fancy Shirt | 4.75/ 5.00 |
| Percales | 5.50/ 6.00 |
| Light Prints | 5.25/ 5.75 |

| | | |
|---|---|---|
| No. 1 Washables | 2.50/ | 2.75 |
| Bleachable Khaki | 4.50/ | 5.00 |
| Unbleachable Khaki | 3.75/ | 4.50 |
| Cottonades | 4.00/ | 4.75 |
| Lt. Flannelettes | 6.75/ | 7.50 |
| Men's Corduroy | 3.25/ | 3.75 |
| Women's Corduroy | 2.75/ | 3.25 |
| Canton Flannels, Blchd. | 8.75/ | 9.25 |
| Underwear Cutters, Blchd. | 10.50/ | 11.00 |
| Underwear Cutters, Unblchd | 10.25/ | 10.50 |

### Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

| | Per 100 lbs. | |
|---|---|---|
| No. 1 Whites, Repacked | $4.25/ | $4.75 |
| No. 1 Whites, Miscellaneous | 3.00/ | 3.50 |
| No. 2 Whites, Repacked | 3.00/ | 3.25 |
| No. 2 Whites, Miscellaneous | 2.75/ | 3.00 |
| Cotton Pants & Overalls | 2.25/ | 2.75 |
| Thirds and Blues, Repacked | 2.25/ | 2.50 |
| No. 1 Roofing Rags | 1.20/ | 1.30 |
| No. 2 Roofing Rags | 1.10/ | 1.20 |
| No. 3 & 4 Roofing Rags | 1.00/ | 1.10 |
| Roofing Bagging | 1.00/ | 1.10 |

### New Foreign Cotton Cuttings

(Prices to Mills, F.o.b. Dock, N. Y.)

| | Per 100 lbs. | |
|---|---|---|
| New Dark Cuttings | $2.75/ | $3.00 |
| New Mixed Cuttings | 2.75/ | 3.00 |
| Light Silesias | 6.50/ | 7.00 |
| Light Flannelettes | 5.50/ | 6.00 |
| New White Cuttings | 10.00/ | 10.50 |
| New Unbleached Cuttings | 10.00/ | 10.50 |
| Fancy Shirt Cuttings | 4.50/ | 4.75 |
| Light Prints | 4.00/ | 4.25 |
| Bleachable Khaki, No. 1 | 4.25/ | 4.50 |
| Unbl. Khaki, No. 1 | 3.50/ | 4.00 |

### Old Foreign Rags

(Prices to Mills, F.o.b. Dock, N. Y.)

| | Per 100 lbs. | |
|---|---|---|
| No. 1 White Cottons | $6.50/ | $7.00 |
| No. 2 White Cottons | 5.50/ | 6.00 |
| No. 3 White Cottons | 3.50/ | 4.00 |
| No. 4 White Cottons | 3.00/ | 3.50 |
| Extra Light Prints | 4.50/ | 5.00 |
| Old Light Prints | 4.00/ | 4.25 |
| Med. Light Prints | 2.50/ | 2.75 |
| Dutch Blue Cottons | 3.25/ | 3.50 |
| Checks and Blues | 2.75/ | 3.00 |
| Linsey Garments | 2.10/ | 2.40 |
| Dark Cottons, European | 2.00/ | 2.10 |
| Dark Cottons, Egyptian | 1.85/ | 2.00 |
| Old Shopperies | 1.75/ | 1.85 |
| New Shopperies | 2.00/ | 2.25 |

### Bagging

(Prices to Dealers, f.o.b N. Y.)

| | Per 100 lbs. | |
|---|---|---|
| Foreign Gunny | $5.50/ | 6.00 |
| Domestic Gunny, No. 1 | 5.50/ | 6.00 |
| Heavy Wool Tares | 6.00/ | 6.25 |
| Foreign Manila Rope | 4.00/ | 4.25 |
| Domestic Manila Rope | 5.00/ | 5.25 |
| Jute Strings | 5.50/ | 5.75 |
| No. 1 Sisal Strings | 3.00/ | 4.00 |
| Mixed Strings | Nominal | |
| Paper Mill Tares | 3.50/ | 4.00 |
| No. 1 Scrap Burlap | | |
| Foreign | 4.00/ | 4.25 |
| Domestic | 4.75/ | 5.00 |
| Austr. Wool Pouches | — / | 6.00 |
| New Burlap Cuttings | 5.50/ | 6.00 |

# MATERIALS

**Aluminum, sulfate:**
- coml. bags, wks. ..... cwt. 1.50
- iron-free ..... 2.75

**Alcohol, ethyl:**
- tax free, dms. c.l. ..... gal. .45
- deld. East Miss.

**Casein, acid-prec.:**
- dom. sh. pt. c.l. ..... lb. .22 / .23½
- imp. ex-dock ..... lb. .19½ / .22

**Caustic soda:**
- c.l. wks. solid, 76%, cwt. ..... 3.05
- flak. & grd. 400-lb. drums ..... 3.45
- 100-lb. drums ..... 3.95
- liquid 50% tanks ..... 2.40
- liquid 73% tanks ..... 2.50

**China clay:**
- dom. air-float. filler, c.l. wks. ton 10.00
- water-washed ..... 11.00
- coating ..... 16.30 /30.00
- imported, ex whse. ..short ton 15.20 /28.35

**Chlorine:**
- single-unit tanks, works .. cwt 2.40
- multi-unit ..... cwt. 2.90 / —
- 4.10 / —

**Formaldehyde:**
- USP, inh. dms. c.l. wks. .... lb. .0570
- l.c.l. E. wks ..... .0620

**Fuel oil:**
- Bunker C, No. 6 Cal. hvy tanks, refinery ..... bbl. 1.25 / 1.55
- light ..... bbl. 1.65 / 2.10

**Hydrogen peroxide:**
- USP, 35% cbys. E of Miss. lb. .23½

**Lime:**
- hydrated, bags, wks. Buffalo ton 13.50

**Rosin:**
- B gum, drms, c.l. Savan ..... cwt. 4.10
- G gum, do ..... cwt. 4.81
- H, I, K, gum, do ..... cwt. 4.87
- FF wood, do ..... cwt. 4.60

**Rosin size:**
- 50% gum & pale grds, tank cars, south, sh. pt. ..... cwt. 4.45 / 4.75

**Salt cake:**
- dom. bulk, c.l. contract del'd ton 18.00 /20.00
- wks. frt. all ..... ton 22.00 / —

**Soda ash:**
- light, 58%, bags, wks. .... cwt. 1.25
- bulk ..... cwt. 1.00

**Sodium silicate 40°:**
- turbid, c.l. wks. ..... cwt. 1.05
- l.c.l. wks. ..... 1.25 / 1.35

**Sodium peroxide:**
- dms. c.l. E. of Miss. ..... lb. .18
- l.c.l. do ..... lb. .18½ / .19

**Soybean, protein:**
- chem. isol, wks. c.l. ..... lb. .20 / .20½
- Cinn. and Chic.

**Sulfuric acid:**
- 60° Be. cbys. c.l. ..... cwt. 1.40
- E. wks.
- l.c.l. ..... cwt. 1.80 / 2.50

**Sulfur:**
- crude c.l mines, contract, long ton 18.00
- f.o.b. vessels Gulf ..... 19.50
- Export, f.o.b. Gulf ..... 22.00

**Sulfur dioxide:**
- liquid, coml. cyl. wks. ..... lb. .09
- multi-unit cars ..... lb. .0535

**Starches**
- pearl corn, bags, c.l. Chic. cwt. 5.17 / —
- white dextrines, c.l. Chic. cwt. 6.44 / —
- potato, Idaho, c.l. wks. .. cwt. 5.00 / —
- potato, Maine, c.l. wks. .... cwt. 5.25 / —
- tapioca, conv. dextrines—cwt. 7.50 / 8.00
- medium grds. Gulf ports .... 6.25 / 6.50
- low, Siam, on dock NY .... 4.25 / 5.25

**Talc:**
- domestic, 50-lb. sacks, c.l. wks. ..... ton 23.00 /28.00

**Titanium dioxide:**
- anastase, c.l. deld., bags .. lb. .19½
- l.c.l. deld. ..... lb. .20
- rutile, c.l. deld. ..... lb. .21½
- l.c.l. deld. ..... lb. .22½

N. B.: For special market conditions, see *Trends*.

# IMPORTS

## IMPORTS AT NEW YORK

*Week Ending June 10*

### Newsprint

H. C. Craig Co., A.C.D., Donnacona, 345 rolls.
(——), G.T.D., Donnacona, 368 rolls.
Montmorency Paper Co., Sommen, Botwood, 2,496 rolls, 2,282 rolls, Charleston.
H. C. Craig Co., Donpaco, Donnacona, 330 rolls.
National Herald, Cornerbrook, Cornerbrook, 20 rolls.
Wall St. Journal, Cornerbrook, Cornerbrook, 328 rolls.
N. Y. World Telegram, Cornerbrook, Cornerbrook, 753 rolls.
N. Y. Herald Tribune, Cornerbrook, Cornerbrook, 988 rolls.
N. Y. Times, Cornerbrook, Cornerbrook, 715 rolls.
Bato Co., Cornerbrook, Cornerbrook, 19 rolls.
Nowy Swiat Publishing Co., Cornerbrook, Cornerbrook, 26 rolls.
Bulkley Dunton Co., Cornerbrook, Cornerbrook, 233 rolls (mutilated).
Amerkai Magyar Nepazava, Cornerbrook, Cornerbrook, 13 rolls.
R. A. Olsen, G.D.D., Donnacona, 372 rolls.
Madden Reeve Angel & Co. Inc., Sirius, Kotka, 807 rolls, 142 rolls Newark.

### Wallboard

Elof Hansson, Inc., Gripsholm, Gothenburg, 243 bls.

### Boxboards

General Motors Overseas Operations, Gripsholm, Gothenburg, 184 bdls.
J. Madden Corp., Sirius, Kotka, 88 rolls, 24 bls. (bleached white folding).

### Tissue Paper

B. F. Drakenfeld & Co., Parthia, Liverpool, 28 cs.
B. F. Drakenfeld & Co., Britannic, Liverpool, 35 cs. (gauze carbonizing).

### Tracing Paper

E. Dietzgen & Co., American Scientist, Hamburg, 15 cs.
F. Post Co., American Scientist, Hamburg, 1 cs.

### Stencil Paper

Stevens Nelson Paper Corp., Olga Maersk, Kobe, 9 cs.
Stevens Nelson Paper Corp., Olga Maersk, Yokohama, 4 cs.


**PAPER MILL INCREASES PROFITS**

**Cost-reduction Program in Lime Recovery Operation Proves Effective**

In 1945 the management of a pulp and paper mill on the East Coast believed improved economy could be attained in the operation of their lime recovery plant. Ralph E. Gibbs, Engineering was assigned to make a complete survey and recommend a program for betterment.

Results: Daily average production increased by 20%. Fuel consumption dropped from 15 million to 11.5 million BTU/ton of 85% available lime.

In January this year further surveys and recommendations were made for this company. The new program is now under way. The new goals: Fuel consumption of 8.5 million BTU/ton; an additional 25% increase in production of 85% available lime.

At your request we will give you the name of this mill, and tell you how to attain similar economies through our service.

**RALPH E. GIBBS, ENGINEERING**
**500 Jessop Place, York, Penna.**

### Surface Coated Paper

Gevaert Co. of America, Axeldyk, Antwerp, 3 cs.

Gevaert Co. of America, Stavelot, Antwerp, 7 cs.

### Transparent Paper

D. Hauser, American Clipper, Hamburg, 1 cs.

### Cardboard

Heller & Uslan, Choctaw, Antwerp, 1 cs. (samples).

### Wallpaper

C. A. Haynes & Co., Britannic, Liverpool, 73 cins., 3 trusses.

Lieberman & Waechli, Sir John Franklin, Nagoya, 7 cs. (grass cloth).

Fine Art Wallpaper Co., Pioneer Wave, Manila, 20 cs. (grass cloth).

### Gummed Paper

B. F. Drakenfeld & Co., Britannic, Liverpool, 25 cs.

### Printing Paper

Stevens Nelson Paper Corp., American Clipper, London, 30 cs.

### Drawing Paper

Penson & Co., American Clipper, London, 2 cs.

Stevens Nelson Paper Corp., American Clipper, London, 1 cs.

### Filter Paper

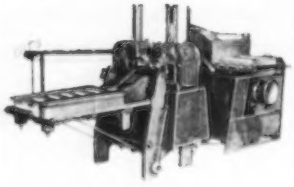
H. Reeve Angel & Co. Inc., American Clipper, London, 22 cs.

### Napkins

H. W. Robinson & Co., American Clipper, London, 1 cs.


Lawtomatic

**SEALING for AUTOMATIC SELLING**



This Lawtomatic
End Sealing Machine is a honey
Its simple
Design will make you money
The cost
Is definitely a secondary issue
Because
It beautifies your Toilet Tissue
Here's another howl
It can do the same for
Your Kitchen Towel

**The C. A. LAWTON COMPANY**

**Dept. PT** **DePere, Wis.**


### Paper & Envelopes

H. W. Robinson & Co., American Clipper, London, 1 cs.

### Rags, Baggings, etc.

A. de Vries Trading Corp., Black Condor, Antwerp, 126 bls. scrap bagging.

E. J. Keller Co., Inc., Black Condor, Antwerp, 76 bls. old bagging.

J. J. Rozendaal, Black Condor, Antwerp, 74 bls. cotton waste.

National City Bank, Khedive Ismail, Alexandria, 56 bls. light hessian tares, 224 bls. hessian bagging, 44 bls. heavy bagging.

E. J. Keller Co. Inc., Khedive Ismail, Alexandria, 196 bls. old bagging.

National Shwamut Bank, Livarden, Buenos Aires, 89 rolls, cotton waste.

(———), Sygna, Santos, 116 bls. old bagging waste.

A. Siegle Corp., Media, Liverpool, 128 bls. jute waste.

Chase National Bank, Media, Liverpool, 34 bls. new woolen rags.

(———), Media, Liverpool, 64 bls. new woolen rags, 5 bls. new wool thread waste.

National Bank of Detroit, Media, Liverpool, 77 bls. scrap bagging.

(———), Havorn, Bremen, 55 bls. cotton waste.

M. E. Schoen, Mormacteal, Salvador, 104 bls. cotton waste.

National City Bank, Excambion, Alexandria, 85 bls. old bagging.

Chemical Bank Trust Co., Excambion, Marseilles, 48 bls. rags.

E. J. Keller Co. Inc., Havorn, Antwerp, 78 bls. old rope waste.

Castle & Overton, Inc., American Packer, Manchester, 32 bls. paperstock.

Lush Cotton Products Co., American Packer, Manchester, 70 bls. cotton waste.

(———), American Packer, Manchester, 50 bls. bagging.

Wollworth & Co., American Packer, Manchester, 20 bls. cotton waste.

(———), American Packer, Manchester, 76 bls. cotton waste.

Chase National Bank, American Packer, Manchester, 41 bls. bagging waste.

D. Bennedetto, American Packer, Manchester, 85 bls. cotton waste.

Darmstadt Scott & Courtney, American Packer, Manchester, 60 bls. hessian bagging.

A. Siegle Corp., American Packer, Manchester, 297 bls. jute waste.

National City Bank, Pioneer Gulf, Manchester, 43 bls. woolen rags.

Trade Bank & Trust Co., Pioneer Gulf, Manchester, 189 bls. new wool rags.

Chase National Bank, Pioneer Gulf, Manchester, 16 bls. woolen rags, 7 bls. woolen waste.

A. Siegle Corp., Britannic, Liverpool, 171 bls. jute waste.

I. Cohen & Son, Britannic, Liverpool, 24 bls. rags.

Chesterfield Paper Co., American Clipper, London, 26 bls. bagging.

Castle & Overton, Inc., American Clipper, London, 16 bls. paperstock.

Harris Goldman Co., Diddo, Amsterdam, 83 bls. old rags.

Midwest Waste Materials Co., Diddo, Amsterdam, 488 bls. scrap bagging.

A. de Vries Trading Corp., Dibble, Antwerp, 105 bls. paperstock.

(———), Egidia, Glasgow, 103 bls. bagging.

China Trading Co., Pioneer Lake, Taku Bar, 200 bls. cotton waste.

O'Brien Products Inc., Pioneer Lake, Taku Bar, 449 bls. cotton waste.

National City Bank, Havfalk, Hamburg, 67 bls. bagging.

Dutton Mast, Havfalk, Rotterdam, 154 bls. rags.

### Woodpulp

Price & Pierce, Ltd., Stavangerfjord, Oslo, 375 bls. bleached sulphite pulp.

The Borregaard Co. Inc., Stavangerfjord, Oslo, 250 bls. bleached sulphite pulp.

Sopic Corp., Exilona, Trieste, 2,240 bls. unbleached sulphite pulp.

China American Paper & Pulp Co., Exilona, Trieste, 840 bls. chemical pulp.

### Woodpulp Boards

Jay Madden Corp., Sirius, Kotka, 611 bls. (solid white).

## IMPORTS AT ALBANY

*Week Ending June 10*

Pulp Sales Corp., Sirius, Kotka, 7,220 bls. prime unbleached kraft sulphate pulp, 1,530 bls. unbleached kraft sulphate pulp, 1,183 bls. prime bleached extra strong bleached sulphite pulp.

## IMPORTS AT BOSTON

*Week Ending June 10*

S. H. Waldstein, Black Condor, Antwerp, 226 bls. cotton waste.

Elliott Addressing Machine Co., Olga Maersk, Kobe, 37 cs. stencil paper, 52 cs. Tegujo paper.

(———), Media, Liverpool, 43 bls. woolen waste.

1st National Bank of Boston, Media, Liverpool, 30 bls. woolen rags.

Atlantic Gelatine Division, General Foods, Media, Liverpool, 208 bags dry hide cuttings.

Stone & Downer, Media, Liverpool, 15 cs. gummed paper.

Forte Dupee Sawyer Co., Axeldyk, Antwerp, 17 bls. rags.

Ayres W. C. Jones, American Packer, Manchester, 50 bls. bagging, 101 bls. cotton waste.

Leigh Textile Co., American Packer, Manchester, 79 bls. cotton waste.

Stone & Downer, American Packer, Liverpool, 4 cs. gummed paper.

## IMPORTS AT PHILADELPHIA

*Week Ending June 10*

Diehl Co., American Scientist, Havre, 334 bags casein.

Bulkley Dunton Pulp Co., American Counselor, Amsterdam, 1,162 bls. woodpulp, 259 tons.

Fulton Weeks, Mormacteal, Rio de Janeiro, 121 bls. gluestock.

Darmstadt Scott & Courtney, American Packer, Manchester, 20 bls. cotton waste.

Leigh Textile Co., American Packer, Manchester, 47 bls. scrap tares, 135 bls. bagging.

Gottesman & Co., Inc., S.S. Uruguay, Iggesund, Sweden, 625 bls. blchd. sulfite, 338 bls. blchd. kraft.

## IMPORTS AT NORFOLK

*Week Ending June 10*

E. J. Keller Co. Inc., Havorn, Bremen, 75 bls. old bagging.

Hipage Co., American Packer, Manchester, 51 bls. old waste bagging.

Darmstadt Scott & Courtney, American Packer, Manchester, 58 bls. bagging.

Dixie Jute Bagging Co., American Packer, Manchester, 51 bls. bagging.

Brandwein Mazur Co., Havfalk, Bremen, 91 bls. old bagging, 47 bls. bagging.

J. J. Rozendaal, Havfalk, Amsterdam, 40 bls. old bagging.

## IMPORTS AT BALTIMORE

*Week Ending June 10*

S. Groage Co., Havfalk, Rotterdam, 56 coils old rope.

## IMPORTS AT PORTLAND

*Week Ending June 10*

Gottesman & Co., Inc., S.S. Astra, Utansjo, Sweden, 5,700 bls. unblchd. sulfite pulp.

# NEW LITERATURE

*Minnesota Historical Society.* Book, by Dr. Grace Lee Nute; sponsored by Minnesota & Ontario Paper Co., price $2.00. Brief history of the region bordering Minnesota and Ontario; illustrated with an unusually fine collection of historical photographs. Beginning with the early mound builders and Indians, relates how the towns and villages were founded; how lumbering, papermaking and other large industries were established; and how the country today still maintains its scenic simplicity and attractiveness. Considerable space is devoted to the history of lumbering in the region — the early lumbering of pine as well as the modern lumbering for the paper mills at International Falls, Fort Frances, Kenora and Fort William — with descriptions of life in the lumber camps, the great log drives, the equipment used, the transportation and processing of the timber and reforestation in the area. The author is a research associate for the Minnesota Historical Society and professor of history at Hamline University. Formerly curator of manuscripts at the Minnesota Historical Society, she did much to build up to its present valuable collection of historical material relating to Minnesota history. In 1934, she was awarded a Guggenheim Foundation fellowship for research and is included in the "100 Living Great of Minnesota."

*S. R. Sikes Co.* Folder, "The New Cordan." Describes and illustrates the new flat leather belting which is cord reinforced to control stretch widths to 24 inches.

*American Cyanamid Co.* Calco Technical Bulletin No. 901, "Physical Chemical Research in the Protective Coating Industry," by Dr. Roy H. Kienle. Reviews the emergence of physical chemical research in protective coatings as an industrial science and its great influence on the remarkable growth of the organic coating industry; the role of physical chemistry in the development of new solvents, vehicles, pigments, paint and actual film research; also some of the new contributions to be expected in the next few years.


THE H. K. FERGUSON COMPANY
PAPER MILL ENGINEERS & BUILDERS
Complete Service for Design, Construction, Equipment Installation, Engineering Reports and Surveys
Executive Offices
Ferguson Building, Cleveland
District Offices
19 Rector St., New York; M. & M. Bldg., Houston; 120 S. La Salle St., Chicago; 2975 San Fernando Road, Los Angeles; 21 E. 12th St., Cincinnati


*Brookfield Engineering Labs., Inc.* Bulletin, "Synchro-Lectric Viscometer, Accurate Viscosity Determinations with 'Slide-rule' Speed!" Describes operation, advantages and construction details of different models.

*Bubar Dust Systems, Inc.* Folder, "Bubar Dust Collectors." Describes operation of Type S Dust Collectors.

*Chicago Bridge & Iron Co.* Pamphlet, "The Watersphere, A Modern Elevated Water Tank of Welded Steel Construction." Contains illustrations of typical installations from 25,000 to 150,000 gallons capacity.

*The Commonwealth Engineering Co.* Annual Report, "Building Blocks of Industry." This is the story of how Commonwealth's policy of complete research worked in 1949 on chemical, electrical and mechanical problems — something about the cost too — and the time factor.

*Dracco Corp.* Bulletin 304, "Dracco Multi-Bag Filter For Dust Control." Shows operation, uses and installation of filters, also volume and resistance tables.

*Clipper Mfg. Co.* Bulletin, "Clipper Saws." Fully illustrated and descriptive literature on the new 1950 Model HD Clipper Saw featuring the factory-sealed pump and water application system, designed to eliminate the necessity of disconnecting the pump when cutting dry.

*Downingtown Mfg. Co.* Bulletin No. 350, "Downingtown Paper Machine Lubrication." Bulletin No. 350A, "Lubrication and Maintenance of Downingtown Suction Press, Suction Couch and Suction Drum Rolls." Bulletin No. 350B, "Lubrication and Maintenance of Downingtown Suction Extractor Rolls." Bulletin No. 350C, "Lubrication and Maintenance of Downingtown Suction Felt Rolls."

*The A. H. Emery Co.* Bulletin No. 501, "Emery Crane Scales." Brings up-to-date and consolidates information on the use, advantages, and construction of Emery Hydraulic Crane Scales for measuring loads while in transit.

*Exporters' Digest.* May-World Trade Week-issue, price 50 cents, "Transportation's Role in World Trade." Contributors include leading authorities in air, ocean, rail and truck transport.

# TARIFF

## G. B. Fowler's Opinion on Tariff Cuts

HOLYOKE, Mass.—The economic welfare of 40 Massachusetts communities and the future of the entire American paper industry are threatened by foreign competition, aided and abetted by "our own socialist government officials." George B. Fowler, treasurer of the Valley Paper Co., bitterly attacked the U.S. State Department and Economic Co-operation Administration for proposing further tariff cuts under the reciprocal trade program. In promoting international trade, the government is virtually certain to lower wages and living standards for the American mill worker, he declared. "The welfare of a great industry is at stake." Mr. Fowler said he is becoming "very impatient" with the way things are going in Washington, and in letters addressed to Sen. Lodge and Saltonstall and Congressmen Furcolo and Heselton, demanded action in the industry's behalf. He said attempts to further the European recovery program by lowering tariffs and thereby close the dollar gap are little more than "monkey business."

Canada has consistently exploited the U.S. paper and pulp market and has practically excluded American paper and pulp manufacturers from Canadian markets. Now, "at the insistence of our own socialist government officials, Britain and other countries have agreed to exclude exports from the United States while, at the same time, stepping up the shipment of their products to our markets," he charged.

Mr. Fowler used a study of community dependency published by the American Paper and Pulp Assn. in October, 1942, to show that 27 Massachusetts communities rely from 25 to 100 per cent on the paper industry. Another 13 communities depend up to 25 per cent on the paper industry for their economic welfare, the report showed. The practical effect of tariff reductions will be to "threaten and perhaps achieve the shutting down of some mill units and also the virtual certainty of establishing a lower standard of wages and living for the American paper mill worker" the Valley Paper Co. executive affirmed.

## Havana Charter Threatens Supply

NEW YORK — Asserting that the I.T.O. Charter is a "dangerous instrument in that it fails to provide any suitable methods to consummate its purpose," the American Paper and Pulp Assn. has filed a statement in opposition to H.J.R. 236 (the Havana Charter) with the House Committee on Foreign Affairs.

According to E. W. Tinker, executive secretary of the association, the exceptions embodied in it practically destroy any positive provisions of the Charter, and in fact support the continuance of many practices which the Charter purports to condemn. Calling particular attention to Article VI of the Havana Charter, which provides for "intergovernmental commodity agreements," Mr. Tinker pointed out that the paper and pulp industry will be particularly vulnerable to these provisions. He indicated that under the

## AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

| | May 6 | May 13 | May 20 | May 27 | June 3 |
|---|---|---|---|---|---|
| 1950 | 102.8 | 102.4 | 103.3 | ‡102.5 | 98.5 |
| *1949* | *84.0* | *81.0* | *80.2* | *83.4* | *78.6* |

| | May 7 | May 14 | May 21 | May 28 | June 4 |
|---|---|---|---|---|---|
| 1950 | 98.7‡ | 101.1‡ | 102.62 | 100.9‡ | 102.0‡ |
| *1949* | *94.6* | *92.8* | *89.1* | *85.1* | *82.7* |

| | June 10 | June 17 | June 24 | July 1 | July 8 |
|---|---|---|---|---|---|
| 1950 | 78.6 | 72.8 | 87.6 | 89.7 | 96.0 |
| *1949* | *73.8* | *87.6* | *89.7* | *96.0* | *98.2* |

‡ Revised.

COMPARATIVE MONTHLY SUMMARIES

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1950 | 98.7‡ | 101.1‡ | 102.62 | 100.9‡ | 102.0‡ | | | | | | | | |
| *1949* | *94.6* | *92.8* | *89.1* | *85.1* | *82.7* | *78.6* | *72.8* | *87.6* | *89.7* | *96.0* | *98.2* | *90.4‡* | *88.0‡* |

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

| | 1943 | 1944 | 1945 | 1946 | 1947 | 1948 | 1949 | 1950 |
|---|---|---|---|---|---|---|---|---|
| Year to Date | 88.9 | 88.4 | 88.8 | 100.0 | 105.3 | 100.5 | 88.6 | 101.2 |
| Year Average | 87.8 | 88.1 | 89.4 | 100.1 | 104.3 | 96.2 | ‡88.6 | |

PAPERBOARD OPERATING RATIOS†

| | May 6 | May 13 | May 20 | May 27 | June 3 |
|---|---|---|---|---|---|
| 1950 | 92 | 93 | 92 | 93 | 83 |
| *1949* | *78* | *79* | *77* | *77* | *65* |

| | May 7 | May 14 | May 21 | May 28 | June 4 |
|---|---|---|---|---|---|
| 1950 | 88 | 92 | 91 | 92 | 91 |
| *1949* | *88* | *85* | *79* | *79* | *78* |

| | June 10 | June 17 | June 24 | July 1 | July 8 |
|---|---|---|---|---|---|
| 1950 | 75 | 64 | 86 | 87 | 94 |
| *1949* | *75* | *64* | *86* | *87* | *94* |

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1950 | 88 | 92 | 91 | 92 | 91 | | | | | | | | |
| *1949* | *88* | *85* | *79* | *79* | *78* | *75* | *64* | *86* | *87* | *94* | *95* | *88* | *85* |

* All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Charter a body such as the Food and Agricultural Organization of the United Nations could be utilized to allocate markets, fix prices and limit the production of pulp and paper, including newsprint. The paper industry faces the control of its raw materials by the same methods. Wood pulp and newsprint are already international commodities and the United States paper market in 1948 absorbed imports of pulpwood, wood pulp, papermaking materials, newsprint and other papers amounting to over $753 million. These imports were the largest for any single industry or commodity in the United States.

In these special circumstances the association feels that it is both its right and its duty to point out the facts which show what the effect on the paper industry will be.

In the year 1949 this country imported 4,600,000 tons of newsprint, principally from Canada. A redistribution of this tonnage among other countries by the F.A.O. would destroy in large part the fundamental constitutional principle of the free press. Mr. Tinker pointed out that the paper and pulp industry has always been firmly opposed to any form of cartelization, national or international, and that the tremendous development of paper production during this century has been due to the free enterprise system upon which our economy is predicated. In Chapter VI of the Havana Charter the industry is threatened with the imposition of a great international government controlled cartel.

Mr. Tinker also pointed out that the United States would have but a single vote in the Council established by the Charter and would be subject to a majority determination of policy in these matters by nations which do not believe in the principle of free enterprise.

By reason of the compromise made at Havana in drafting the Charter, it completely fails to promote the American principles of free enterprise and, indeed, sanctions planned economy and statism with complete control of production and trade.

As the industry most seriously affected, the paper and pulp industry is opposed to the Havana Charter.

### Institute Of Paper Chemistry Realigned

APPLETON, Wis. — Realignment of top administrative officers of the Institute of Paper Chemistry here, to conform with other large educational institutions, was announced May 18 by the board of trustees.

Westbrook Steele, executive director of the institute since its founding 20 years ago, was made president. Ernst Mahler, vice-president of Kimberly-Clark Corp. of Neenah, who has been president, was made chairman of the board. D. C. Everest, board chairman of the Marathon Corp. of Rothschild, and John L. Riegel of New York, were made vice-chairmen instead of vice-presidents.

John G. Strange, secretary-treasurer, was named vice-president and treasurer; and C. B. Sitterson, Jr., assistant secretary, was named secretary. George Olnsted, Jr., of Boston, was elected a trustee to replace Norman W. Wilson, Erie, Pa., who has resigned.

About 300 executives of pulp and paper and allied industries were here for the annual executives' conference of the institute. Besides addresses on problems of the associated industries, they were to meet with the institute staff for talks about specific problems.

## OBITUARIES

**Henry W. Hildebrand,** 76, a resident of Colorado more than half a century, died May 30 at Phoenix, Ariz., where he had made his home since 1933.

In 1897 Mr. Hildebrand, with his father, organized the Inland Paper Box Co., Denver, Colo. He operated it until 1933.

Surviving are his widow, Gena; a son, Henry W. Hildebrand Jr., a sister, Mrs. Rollie W. Bradford; two brothers, William C. and Edward W. and one granddaughter.

**Donald D. Davis,** 61, nationally known industrialist and president of the Minnesota & Ontario Paper Co., died on June 7.

He was elected executive vice president of the Minnesota & Ontario Paper Co. in 1944 and in 1945 succeeded R. H. M. Robinson as president.

During the first World War Mr. Davis was executive secretary of the milling division of the United States Food Administration, working with Herbert Hoover.

Two years ago Mr. Davis served on the Hoover Commission on Government Reorganization as a member of a subcommittee on Federal lending.

Surviving are his widow, a son and two daughters.

**George A. Arbogast,** 60, traveling representative for the Ecusta Paper Corp., died on June 3 in Fletcher, N.C.

Mr. Arbogast began his career in Brooklyn with the American Machine and Foundry Co.

Surviving are his widow, his mother, two daughters, two sons, a sister and two brothers.

**E. Donald Pope,** 49, Springfield Paper broker, died June 1 at Springfield, Mass.

Mr. Pope was president of the Mill Brand Papers, Inc., at the time of his death. With him in the business was his twin brother, Ernest E.

Mr. Pope was the son of the late Elmer Pope, inventor of paper mill machinery who was connected with the American Tissue Mills, Holyoke and the Great Northern Paper Co. of Millinocket, Maine.

He is survived by his widow, Carolyn, a son, a daughter, his mother, two brothers and two sisters.

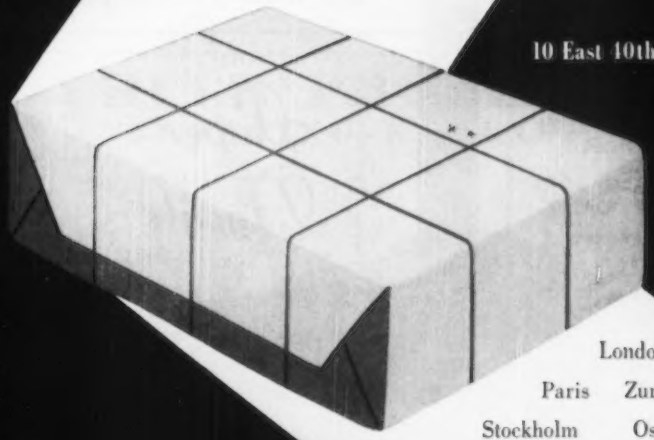
# Lyddon & Co.

exporters of
wood pulp to all
world markets

# Parsons & Whittemore

paper exporters
wood pulp

10 East 40th Street, New York 16, N. Y.



London
Paris Zurich
Stockholm Oslo
Sousse Montreal
Buenos Aires
Sao Paulo

## RECORD PAPER & PULP STOCK VALVES "BONNETLESS SELF CLEARING - - - "RESIDUE POCKETLESS TYPE"

**METALS — I.B.B.M., all iron, bronze or stainless steels, body parts plain or rubber lined.**

*The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.*

- The "FAST THREADED" screw stem and ball bearing speeds valve operation.
- The packing box is extra deep, is adjustable and provided with specialized lubricated packings and special type gland and compression bolts.
- The yoke mountings are such that yokes for various methods of gate operation are interchangeable.
- Replaceable gate edge shoes are used in valves 10" and larger. These shoes are of special value when valves are installed stem and pipe horizontal.

*"RECORD PRODUCTS EXTENSIVELY USED IN DEFENSE PROJECTS"*

**RECORD FOUNDRY & MACHINE COMPANY**

LIVERMORE FALLS, MAINE, U. S. A.

## WEST VIRGINIA PULP and PAPER COMPANY

230 Park Ave.
New York 17, N. Y.

35 East Wacker Drive
Chicago 1, Ill.

Public Ledger Building
Philadelphia 6, Pa.

503 Market St.
San Francisco 5, Calif.

### Manufacturers of West Virginia Mill Brand Papers

SUPERCALENDERED ENGLISH FINISH
LITHOGRAPH
LABEL
OFFSET
EGGSHELL
MUSIC
POSTER
BOND
WRITING

ENVELOPE
MIMEOGRAPH
INDEX BRISTOL
POST CARD
COVER
CUP AND CONTAINER
FILE FOLDER
TAG
COATED
MACHINE COATED

KRAFT CONVERTING AND KRAFT ENVELOPE
KRAFT LINER BOARD

MILLS

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

## PRICE & PIERCE LTD.

*Wood Pulp and Paper Agents*

60 E. 42 ST., N. Y. 17

## "EXCELSIOR" FELTS

The Trademark of Felts of Superior Quality for Every Grade of Pulp and Paper

KNOX WOOLEN COMPANY
CAMDEN, MAINE

# F. PAUL BIRK

## CONSULTING ENGINEER

**PAPER & PULP MILLS**
**POWER PLANTS**

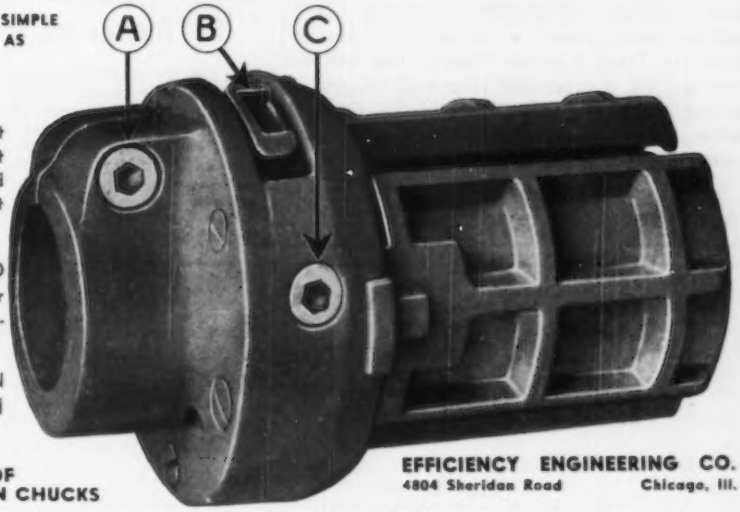
64 W. RANDOLPH ST. CHICAGO 1, ILL.



# CHUCK PROBLEM SOLVED

**APPLYING-EXPANSION-CHUCKS**

AS SIMPLE AS




**INSTRUCTIONS**

**A**—TO LOCK CHUCK at proper position on shaft insert hex wrench and tighten down socket bolt **A** firmly.

**B**—TO LOCK ROLL TO SHAFT insert flat bar tool at **B** and pull upward firmly.

**C**—TO LOCK EXPANSION —insert hex wrench and tighten socket bolt **C**.

**EXCLUSIVE FEATURES OF EFFICIENCY EXPANSION CHUCKS**

1—Both shaft and core are positively locked together.
2—Perfect alignment is assured.
3—It expands into place.
4—Solid and positive drive.
5—Equally effective for returnable—non-returnable—or metal cores.
6—No lefts or rights—Each chuck of a pair is the same.
7—Withstands unlimited tension.

**EFFICIENCY ENGINEERING CO.**
4804 Sheridan Road Chicago, Ill.

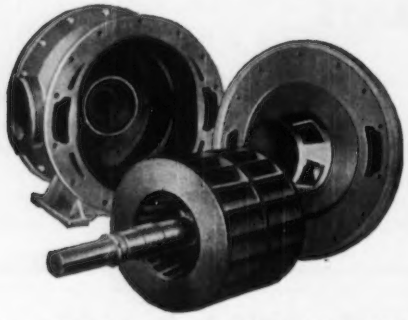
## The Hinde & Dauch CRUSH TESTER

**TO CONTROL QUALITY OF PRODUCT**—A practical, heavy duty instrument for ring stiffness tests of liner-board and box-boards and flat crush tests of combined corrugated board. Measurements uniformly accurate. Recording mechanism independent of machine elements, eliminating friction; plunger and plate free of lateral movement.

SCHOPPER TYPE TENSILE TESTER • BASIS WEIGHT SCALES
MICROMETERS • OTHER TESTING INSTRUMENTS
STRIP CUTTERS FOR UNCOMBINED BOARD TESTS

**TESTING MACHINES INC.**
427 WEST 42ND STREET, NEW YORK 18

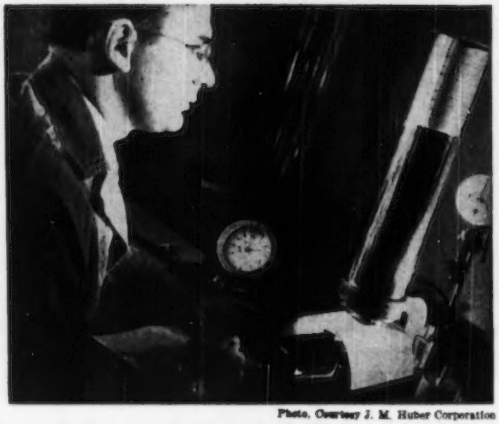
## SIMPLICITY



**NASH VACUUM PUMPS HAVE ONE MOVING PART**

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

**NASH ENGINEERING COMPANY**
**SOUTH NORWALK, CONNECTICUT, U. S. A.**



Photo, Courtesy J. M. Huber Corporation

## Single Instrument Measures Smoothness, Porosity and Softness of Paper

You just interchange the lower test plates in the GURLEY-HILL S-P-S Tester to convert it into an instrument for testing either smoothness, porosity or softness of any type of paper, by measuring a given air-leakage over or through the paper.

This 3 in 1 laboratory "assistant" is simple to operate, quick and accurate, and a real utility instrument where printing quality of paper must be reliably measured.

Bulletin No. 1400 describes the S-P-S Tester as well as other Gurley paper testing instruments. It's worth writing for today. W. & L. E. Gurley, 520 Fulton St., Troy, New York.

Remember the name **"NORTH"**
when you have a screening problem.

The **"NORTH"** Water Filter
for mill fresh water supply.

The **"NORTH"** Save-all
for fibre or stock recovery.

★ ★ *Self-cleaning, rotary screens built in 4 different sizes.*
★ ★ *30 years of successful and proven installations.*

**GREEN BAY FOUNDRY & MACHINE WORKS** GREEN BAY, WISCONSIN, U. S. A
*Write for particulars today.*

# CONVERTERS SOLVE WRINKLING AND CREASING PROBLEMS

## Mount Hope WITH FREE-WHEELING EXPANDERS

"We have at least one Mount Hope Expander in use on *every* machine in our plant, and are *completely satisfied* with their performance!"

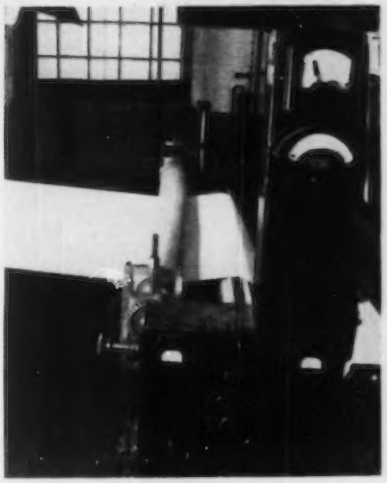
This report by one of the largest N. E. Paper Converting Companies is typical of the complete satisfaction expressed everywhere.

Mount Hope Expanders are used on all types of machines to eliminate wrinkles and creases and to improve paper quality.

Equally effective on dry or wet paper. They eliminate wrinkles and baggy edges that cause out of register printing on offset and lithographic presses.

*It will pay you* to investigate the advantages of Mount Hope Expanders in your plant.

*A Mount Hope Engineer is at your service without obligation*



Installation of Mount Hope Expander at Appleton Coated Paper Co. — prevents welts and wrinkles on Kohler Rewind.

Send today for Bulletin EPZ

**MOUNT HOPE MACHINERY COMPANY**
**42 Adams St., Taunton, Mass.**

# "Hasn't that Guy Finished with Paper Trade Journal YET?"

In this fast-moving paper industry the news is only valuable when you read it while it's "hot"! That's why it can be an expensive economy to rely on the office copy of PTJ for your business reading. If your eye is on the top, why not follow the lead of other ambitious executives and have us send PAPER TRADE JOURNAL directly to your home every Thursday. Use the handy coupon below and start your personal subscription *today*.

**PAPER TRADE JOURNAL**
**15 West 47 Street, New York 19**

Yes, send me my personal copy of PTJ every Thursday. I enclose my check for a full one year subscription.

Name ..... Position .....
Address .....
City .....Zone .....State .....
This is my home....office....address.

RATES: United States one year $5.00, six months $2.50. Canada one year $7.00, six months $3.50. Latin American Countries $15.00 per year. All other countries $20.00 per year.

## WILLIAMS PRECISION FREENESS TESTER

**The Most Accurate Freeness Tester Ever Built**

Operates on the Only Correct Principle of Freeness Testing.
Automatic Timing with Electric Stop Clock which Measures Drainage Rate through a Wire, same as on Paper Machine.

**For 25 years we have developed and manufactured Pulp and Paper Testing Equipment**

Pulp Testing Ovens
Sheet Moulds
Laboratory Presses
Sheet Dryers
Wood Chip Classifiers
Pebble Mills
A.S.T.M. Penetration Testers
Electric Centrifuges
Paper Moisture Testers
Smoothness Testers
Laminating and Plastic Moulding Presses

**WILLIAMS APPARATUS CO., Inc.**

19 Park Place — Watertown, N. Y.

---

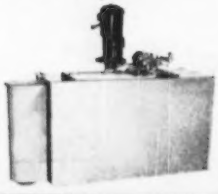
**DeZURIK**

**POINTS WITH**

**PRIDE**

WEST VIRGINIA PULP & PAPER CO. HAVE INSTALLED A TOTAL OF MORE THAN SIXTY DeZURIK CONSISTENCY REGULATORS IN THEIR VARIOUS MILLS!

Year after year, *repeat orders* from North America's outstanding pulp and papermakers are adding to the proof-of-performance of DeZurik Consistency Regulators.



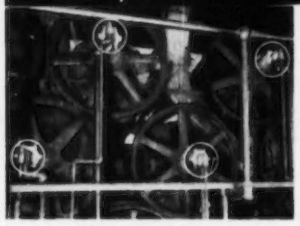
**DeZURIK SHOWER CO.**

SARTELL, MINNESOTA

---

*Only* Johnson Joints offer *all* these cost-cutting, trouble-saving, production - boosting benefits. *Only* Johnson Joints end *all* the shortcomings of old style stuffing boxes, without compromise of any sort. No wonder so many hundreds of mills, and so many machinery manufacturers, have standardized on Johnson Joints. Why not find out how quickly Johnson Joints can pay their own way in your mill.

**Johnson Rotary Pressure Joints**



*Write for catalog showing sizes and styles for all needs.*

Installation in a midwestern mill — some of the 562 Johnson Joints purchased by this company.

The JOHNSON CORPORATION, 828 Wood Street, Three Rivers, Michigan

---

# PARAFFIN & MICROCRYSTALLINE WAXES

*CARLOADS — TANK CARS — TRUCKS*

**NATIONAL WAX COMPANY**

1300 WEST DIVISION STREET
CHICAGO 22, ILLINOIS

# SONOCO
# PAPER MILL CORES

**Made to Fit Your Individual Specifications**

## DURO

*RETURNABLE*

Made in one plus-standard quality. Equipped with SONOCO Heavy Duty or Light Duty, open or closed notched metal ends.

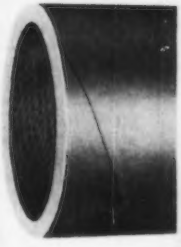
## EN-DURO

A super-quality core to meet demands for extra strength and service. This is our highest grade core, and is recommended for those that need the best.

*NON-RETURNABLE*

RHINO
NON-RETURNABLE

An extremely tough, strong, low cost core that meets the market for a standard product giving superior service.



Other paper cores for: paper twine, tire wrapping, toilet tissue, wax paper, paper toweling, decorative paper, gummed tape, and business machine paper.

Samples, prices and further information will gladly be sent on request... Address correspondence to Hartsville, South Carolina or Mystic, Connecticut.

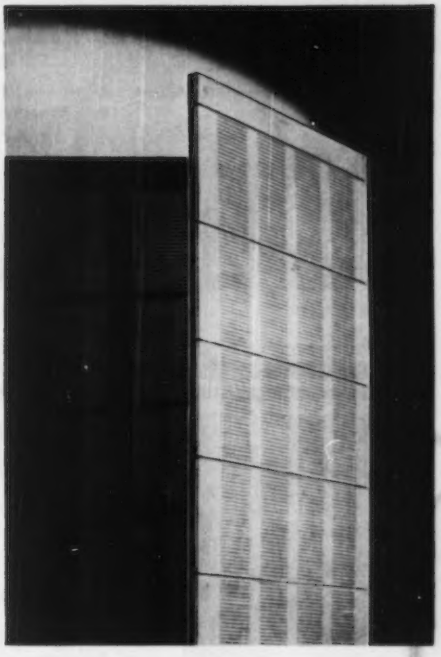
sonoco
PAPER CARRIERS
REG. U.S. PAT. OFF.

**SONOCO PRODUCTS COMPANY**

BRANTFORD ONT. | HARTSVILLE S. C. | MYSTIC CONN.

DEPENDABLE SOURCE OF SUPPLY





## *3* Good Reasons Why
# 28,000 FABRICATED SCREEN PLATES
## Are Now In Service

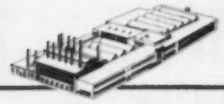
"Hardy" fabricated screen plates, made by Magnus, have a high-strength, thin-sheet design — specially engineered for maximum flow. That's why you're sure of these 3 service-proved advantages:

(1) **Increased Plate Capacity** — The thin sheet eliminates relief milling, and with recommended arrangement, substantially increases capacity per plate.

(2) **Longer Life** — Slots remain sharp, side walls highly polished for the life of the plate. There's greatly improved corrosion resistance.

(3) **High, Sustained Yield** — You get consistent, uniform quantities of cleaner pulp.

It all adds up to improved performance at reduced operating costs. Complete information is yours on request. Or if you like, we'll gladly have an engineer call.



**MAGNUS METAL CORPORATION**
FITCHBURG, MASSACHUSETTS

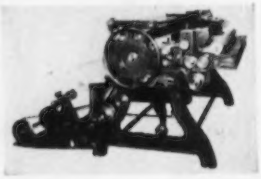
*Metalworkers for the Paper Trade*

SCREEN PLATES: BRONZE, CHROME-NICKEL-STEEL, AND INCONEL
VALVES: GATE, SWING CHECK, BLOW, GLOBE, ANGLE AND "Y"

# STANDARD & FACIAL TISSUE ROLL CONVERTERS

***WITH OR WITHOUT***

**Latest Improvements: Parent Roll Drive with Automatic Tensioning—Velvet Smooth, Quick Accelerating Clutch—Roll Wrappers That Will Handle Varying Diameters.**



Slitters and Rewinders for Vulcanized Fibre and Heavy Board

•

Towel Interfolders for single interfold

•

Special Machinery

Rotary Card Cutters

•

Spiral Tube Machines for Toilet Roll Cores

•

Designing

## DIETZ MACHINE WORKS

**Factory-Office: 126 W. Fontaine St.**

**SINCE 1901** **PHILADELPHIA 22, PA., U. S. A.**

**ON THE JOB**
READY FOR THE
FINEST OF CASTINGS

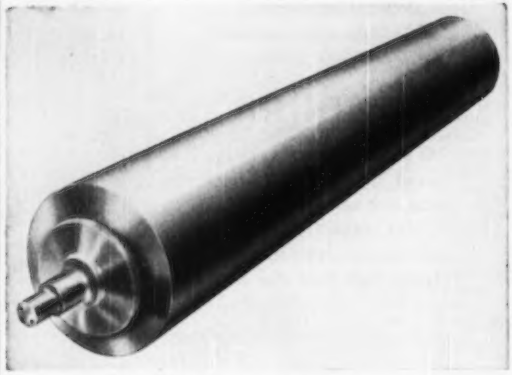
# "TAPPING A BATCH"

Every batch that goes into a Chief Sandusky Centrifugal Casting is of the same high quality. Virgin metals and composition ingot of the highest quality available are always used. Close control of melting atmospheres with accurate pyrometric control of temperature insure uniform, top grade alloys.

*Specify Chief Sandusky Castings from your machine builder.*

CHIEF SANDUSKY *CENTRIFUGAL CASTINGS*

SANDUSKY FOUNDRY AND MACHINE CO. SANDUSKY OHIO, U.S.A.



## McBRIDE brings you a *Complete* ROLL *Service*

**PRODUCTION:** Modern production facilities for large and small rolls of all types in metal, wood, and rubber covered.

**ENGINEERING:** McBride engineers work with you to solve individual roll problems, then supervise production to assure rolls that meet your exact needs.

**MAINTENANCE:** A special department for maintenance and repair work is your assurance of prompt, top quality work.

| | | |
|---|---|---|
| Table Rolls | Couch Rolls | Stainless Steel Rolls |
| Wire Carrying Rolls | Press Rolls | Wood Rolls |
| Felt Carrying Rolls | Brass Rolls | Repairs to Rolls |

## Mc BRIDE

**Edward J. McBride Co., Inc. • 1394 Adams Ave., Phila. 24, Pa.**

**ROLLS OF ALL TYPES FOR EVERY PURPOSE**

**PAPER MILLS**
**STEAM PLANTS**
**HYDRO-ELECTRIC DEVELOPMENTS**
**EQUIPMENT INSTALLATIONS**
**FOUNDATIONS AND DOCKS**

# C. R. MEYER AND SONS COMPANY

***GENERAL CONTRACTORS***

**Over Thirty-five Years of Paper Mill Construction**

ORGANIZATION, including equipment and competent supervision, always immediately available for quick repair work to Dams, Bridges, all forms of Water Power Development, the setting of Heavy Machinery, and the rebuilding and repairing of Stock Chests, Bleacher Tanks, Finishing Rooms, Digester Buildings, Floors and Roofs.

**Telephone**
**Blackhawk 4400**

**50 State Street**
**Oshkosh, Wisconsin**

NYCO

# Super Colors

SELF-DISPERSING PIGMENTS
OF EXCELLENT LIGHT FASTNESS.
FOR HIGH GRADE BEATER COLORED
AND COATED PAPERS

## NEW YORK COLOR & CHEMICAL CO.

DIV. OF AMERICAN DYEWOOD CO.

**BELLEVILLE, N. J.**

BRANCHES: BOSTON HOLYOKE PHILADELPHIA KALAMAZOO CHICAGO

# POTDEVIN

*Multi-wall specialty*

**BAG MACHINERY**

Model 84 IRA "Duplex" flour, sugar and potato SOS bag machine.

ANILINE PRESS

GLUE MILL ROLL HEADER

Machinery for making single-wall, or "duplex" or "triplex" self-opening square bags or satchel-bottom (block bottom) sacks from plain or pre-printed paper—at speeds up to 250 per minute.

POTDEVIN Aniline (up to 40" wide) and oil-ink presses (up to 64" wide) available for printing flour and sugar bags from 2 to 6 colors.

*Consult our engineers on any problem. No obligation. Literature on request.*

**POTDEVIN MACHINE CO.**

1223 38th St., Brooklyn 18, N. Y.

Designers and manufacturers since 1893 of equipment for Bag Making, Printing, Coating, Gluing and Labeling

POTDEVIN

# POTDEVIN

**Oil-Ink (Letter-Press)**

**PRINTING PRESSES**

*Model 618 6-color multi-use, oil-ink printing press for all types of coffee, flour and sugar bag papers and printed wrappings. Automatic tension control rewind insures tight, evenly wound rolls.*

ANILINE PRESS

S.O.S.

POTDEVIN presses are available in a wide range of types and sizes. Incorporation of supplementary units for slitting, perforating or punching, make POTDEVIN presses universally adaptable. High speed models from one to six colors for drinking cup paper; coffee, sugar, flour bag papers; cellophane; glassine; parchment, etc.

*Consult our engineers on any problem. No obligation. Literature on request.*

**POTDEVIN MACHINE CO.**

1223 38th Street Brooklyn 18, N. Y.

Designers and manufacturers since 1893 of equipment for Bag Making, Printing, Coating, Gluing and Labeling

POTDEVIN

Barney Benson — Paul Foster
Peter Talbot, Jr. — Howard Gerber
Harry Hulmes — Charles Pennings, Jr.
Ross H. Lawrence

**WILLIAMS-GRAY CO.**
221 North LaSalle Street
Chicago 1, Illinois

*

**Lindsay & Niagara Wires**
**Knox "Excelsior" Felts**
**Siamese & Richland Dryer Felts**
**Carrier Rope**
**Splicing Tissues**
**Deckle Webbing**
**Etc.**

**CHAS. T. MAIN, INC.**
CONSULTING ENGINEERS
Process Studies, Design, Specifications and Engineering Supervision
**PULP AND PAPER MILLS**
Steam, Hydraulic and Electrical Engineering
Reports, Consultation and Valuations
80 Federal Street — Boston 10, Mass.

**ALVIN H. JOHNSON & CO.**
INCORPORATED
415 LEXINGTON AVENUE
NEW YORK (17), N. Y.
Consulting Engineers
to
The Paper Industry
Since 1929

**THE RUST ENGINEERING COMPANY**
Engineers and Constructors
Pittsburgh, Pennsylvania
Complete Service
for
PULP AND PAPER MILLS—PLANTS AND FACILITIES
DESIGN, CONSTRUCTION, MODERNIZATION

**RODERICK O'DONOGHUE**
CONSULTING ENGINEER
PULP MILLS — PAPER MILLS
IMPROVED PROCESSES — DESIGNS — REPORTS
420 Lexington Ave. — New York City

DEINKING — DECOLORIZING
COOKING PROCESSES
K-121-B and K-140
ENGINEERING
**THE KINSLEY CHEMICAL COMPANY**
4838 WEST 130th STREET — CLEVELAND 11, OHIO

**BUNGE PULP & PAPER COMPANY**
45 West 45th Street, New York 19, N. Y.
Telephones: LUxemburg 2-5178—4174—4830
Cable Address: ALFBUNGE
**Wood Pulp (all grades)**
**Newsprint — Kraft Wrapping**
**All Splicing Tapes**

**Cowles NU-NAP**
**FELT WASHING DETERGENT**

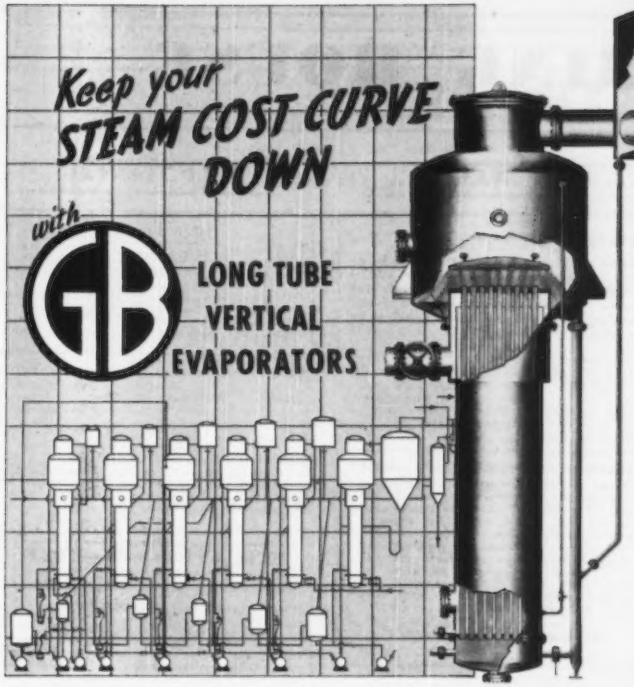
Cowles NU-NAP contains a new combination of products and a brand new idea in detergent action. NU-NAP does an outstanding washing job on paper machine felts — both on and off the machine. NU-NAP will give extra life to your felts—it leaves them unusually clean—fluffy and absorbent.

Use NU-NAP for dependable—safe—free rinsing felt washing.

WRITE FOR COMPLETE INFORMATION
AND PRICES
IMMEDIATE DELIVERIES

**COWLES CHEMICAL COMPANY**
PAPER CHEMICAL DIVISION
7016 EUCLID AVE. — CLEVELAND 3, OHIO

**MISCO**
**STAINLESS STEEL CASTINGS**
*for all equipment exposed to corrosion by sulphite acids or other corrosive agents*
MICHIGAN STEEL CASTING CO., DETROIT 7, MICH.



*Keep your* **STEAM COST CURVE DOWN**

*with* **GB** **LONG TUBE VERTICAL EVAPORATORS**

If your black liquor evaporators are obsolete, your steam costs are probably abnormally high, even for these days. Only by increasing the number of effects with an efficient condensate flash removal system can you decrease evaporation costs to offset increased steam costs.

Recent Goslin-Birmingham Multiple Effect Black Liquor Evaporator installations are paying for themselves through *savings in steam.*

Write, wire or phone for a skilled representative to call and discuss your problems. No cost or obligation, of course. Literature on request.

**GOSLIN - BIRMINGHAM**
**MANUFACTURING COMPANY, Inc.**
**Birmingham 1, Alabama**

CHICAGO:
F. M. deBeers and Associates, 20 N. Wacker, Chicago, Illinois
NEW YORK:
Goslin-Birmingham, 350 Madison Ave., New York 17, N. Y.

---

*Here's your Catalog*

**for grating and stair treads**

**Full of applications, specifications and engineering data that will help solve your grating problems**

**Send for your copy TODAY**

WHATEVER your grating problem . . . flooring, catwalks, stair treads, bridge surfacing, sidewalk doors, subway gratings, or any of the hundred and one uses for any industry . . . you'll want this big new Bulletin for complete information on construction details and *all* the advantages of Blaw-Knox Steel Gratings.

*Electroforged* into one piece for extra strength and permanence! Twisted bar construction for safe, non-slip footing! Self-cleaning! Maximum open area for light and air! Economical to install, easy to maintain! Adaptable to many uses! Get all the details *now* . . . write for Bulletin 2296.

**BLAW-KNOX DIVISION**
**of Blaw-Knox Company**
**2055 Farmers Bank Bldg., Pittsburgh 22, Pa.**

**BLAW-KNOX ELECTROFORGED STEEL STAIR TREADS**
Designed for tremendous strength against impact. Available with rolled diamond checker plate nosing (illustrated); twisted cross bar nosing; or abrasive nosing.

**BLAW-KNOX** ELECTROFORGED STEEL GRATING

# CLEARING HOUSE

## HELP WANTED

### MEN WANTED
### POSITIONS OPEN

We can place superintendent coating kraft paper plant; assistant superintendent kraft mill; night superintendent blue print mill; assistant superintendent board mill; assistant fabricating superintendent insulation products.

Fourdrinier machine foremen for groundwood and sulphite, also rag content papers. Finishing room foreman blue print papers; four boss box board mill; supervisor carton printing, salary $7500 to $9000 year; chemists and chemical engineers; cost accountant southern plant; beater engineer; machine tenders and back tenders; working millwright foreman, 2 machine mill.

We invite correspondence (confidential) with executives seeking positions and with employers seeking *new personnel*.

**CHARLES P. RAYMOND SERVICE, Inc.**
294 Washington Street, Boston, Mass. J-15

WANTED: by aggressive one machine Midwest boxboard mill, working Master Mechanic, to take full charge of paper machine and all other equipment including boiler room. Must be able to handle men. State age, experience, list previous jobs, personal details and salary desired. Job open at once. Address Box 50-280 care Paper Trade Journal. J-15

### WANTED—EXECUTIVE

Preferably engineer with industrial and mechanical education to be Assistant to President in coordinating factory management in Midwestern paper converting plant. Should be familiar with all types of printing machinery, including letterpress, aniline and rotogravure, and have good experience in their production. Also, should have a good background of experience in various fields of paper conversion. The man desired must be well qualified and able to get along well with existing personnel and be able to eventually reduce costs of production. Write, giving age, complete history and detail of experience, stating compensation expected. Our employees know of this advertisement. Address Box 50-264, care Paper Trade Journal. J-15

Chemical manufacturer requires services of man with technical training and several years' experience in paper manufacture to handle technical service work in connection with an extended line of chemicals used by the Paper Industry. Should preferably be between 25 and 35 years of age. Will be required to travel to paper mills within given area and after securing proper training and experience should be qualified to discuss mill problems of a chemical nature with paper mill executives. Our men know of this advertisement. Write Box 50-272, care Paper Trade Journal. J-15

## HELP WANTED

**WANTED:—**

Two up and coming back tenders with five to ten year's experience on felt, board or .009 machine to break in as machine tenders. Two boys with dry end experience to break in as back tenders, would prefer unmarried men. Replies to Box 50-229 care Paper Trade Journal. J-15

CHEMIST OR TECHNICAL SUPERVISOR WANTED for two machine board mill in Indiana. Recent college graduate with some paper mill experience preferred. Fine opportunity for an aggressive man. Address Box 50-276 care Paper Trade Journal. J-15

**SALARIED POSITIONS $3,500—$35,000**

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops avertures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

**R. W. BIXBY, INC.**
117 Dun Bldg., Buffalo 2, N. Y.
TF

### SALES ENGINEER WANTED

One of the largest industrial instrument companies needs aggressive sales engineer for Southeastern territory. Familiarity with pulp and paper processes desirable. Graduate engineer willing to travel. Automobile furnished. Exceptional opportunity for man alert to growing need of instrument applications and usage.

Reply Box 50-267 care Paper Trade Journal. J-15

"Control Laboratory Chemist required by kraft specialty pulp and paper mill. Must be capable of supervising a staff of technicians and paper testers, have a college education and be able to assume complete responsibility for the control of both pulp and paper. Address reply to Box 50-271 care Paper Trade Journal giving full information. J-15

WANTED—Technical Service Man for Paper Coatings field. Young chemist or Chemical Engineer, 1 or 2 years experience in Paper Coatings or Paper Mill. Address Box 50-262 care Paper Trade Journal. J-15

**WANTED—PAPER MILL CHEMIST**

Mid-western mill wants Paper Chemist-Technologist of several years laboratory experience. College training in Pulp and Paper course preferred. Should be capable of supervision of small staff of technicians and paper testers. Give complete information on education, experience and salary desired in first letter. Address Box 50-247 care Paper Trade Journal. TF

WANTED Instrument and Scale Man for Paper Mill in New Jersey. Excellent chance for advancement for the right man. Address Box 50-295 care Paper Trade Journal. J-22

## HELP WANTED

**HELP WANTED**

**TOUR BOSS or ASSISTANT SUPERINTENDENT**

To take charge of Beater Room. Must have experience on rag content papers and be a good color man. Address Box 50-298, care Paper Trade Journal. J-15

PLANT MANAGER—For Eastern Felt Mill. Good pay, job security, for top flight man, experienced in cylinder machine, low cost felt production, flooring and roofing saturation. Write complete details immediately. Address Box 50-277, care Paper Trade Journal. J-15

PERSONNEL SERVICE ASSOC., 115 State Street, Springfield, 3, Mass. Specialized Confidential Placement Service for the Paper and Allied Industries. Positions and men always available. Inquiries welcomed. J-15

## SITUATIONS WANTED

### PLANT ENGINEER

20 years successful administrative and engineering experience in construction, design and maintenance of buildings and power and production equipment. Resume of history and experience upon request. 9 years chief engineer of board mill and carton plants. Age 42. Address Box 50-269 care Paper Trade Journal. J-15

Philadelphia area salesman seeks change to small or medium size folding paper box concern. Numerous valuable industrial contacts Philadelphia area. 7 yrs. real selling, 4 yrs. college, new car, age 31, married. Presently employed at $6,000 yr. and expenses. Prefer unlimited income profit sharing arrangement. Let's grow together! Box 50-296 care Paper Trade Journal. J-15

PLANT MANAGER—Board and Paper Conversion; employed; seeks opportunity in company needing cost-minded executive with proven production record and excellent labor relations history. Address Box 50-233 care Paper Trade Journal. J-29

DIRECTOR RESEARCH—College graduate. 20 years experience Research, Production, Manufacturing Converting Paper, Synthetic Coatings, Adhesives, Imagination, Know How, Initiative, Items, Processes. Seeking new responsibilities with well established company in Research Management. Address Box 50-278, care Paper Trade Journal. J-15

CHEMICAL ENGINEER B. S. — Young, Versatile. Development experience on new functional papers. Also technical executive and sales service background. Desires responsible position in Midwest Area. Address Box 50-279 care Paper Trade Journal. J-22

EXPERIENCED MAN accustomed to handling high grade papers, desires connection with mill as salesman or eastern representative. Address Box 50-297 care Paper Trade Journal. J-15

## RATES FOR CLASSIFIED ADVERTISING

**HELP WANTED**—10c a word. Double rate for heavy face type. Minimum charge $2.50.

**SITUATIONS WANTED**—10c a word, double rate for heavy face type. Minimum charge $2.50. If repeated ½ rate will be charged for each consecutive repetition.

**FOR SALE**—10c a word. Double rate for heavy face type. Minimum charge $2.50.

**WANTED**—10c a word. Double rate for heavy face type. Minimum charge $2.50.

**OPPORTUNITIES**—10c a word. Double rate for heavy face type. Minimum charge $2.50.

Classified advertising space may also be purchased at $5.00 per single column inch. All classified advertisements are payable in advance. If box number is used—70 cents additional.

Address replies to advertisements appearing under Box Numbers in care of PAPER TRADE JOURNAL, 15 West 47th Street, New York 19, N. Y.

# FOR SALE

**1—112" Cameron, Type 18, 60" rewind.**
**1—72" Cameron, Type 10-11 (Late type)**
**24—Dryers 48" diameter x 130" face including frames, gears, bearings, etc.**

**BEATERS**
1—500 lb. Beater—iron tub.
1—Dilts Iron Tub Laboratory Beater. Beater roll 14" diameter x 10½" face, including motor.

**CALENDER STACKS**
1—72" 5 roll Calendar Stack.
1—2 roll pressure calender—32" x 108".

**CHIPPERS**
2—96" Murray 4 knife Chippers—anti-friction bearing.

**CRUSHER & HAMMERMILL**
1—Murray Chip Crusher.
1—Jeffrey Hammermill.

**CYLINDER MOLDS**
1—36" diameter x 80" face.
1—30" diameter x 72" face.
1—36" diameter x 79" face.
1—48" diameter x 84" face.
1—36" diameter x 88" face.
1—36" x 68" face.
2—36" diameter x 54" face.

**DECKERS**
3—IMPCO 75½" face x 30" diameter cylinder mold.

**DRIVES**
2—75 h.p. drives.
2—#4 Reeves Drives.
1—#2 Reeves Drive.
1—#5 Reeves drive.

**V-BELT DRIVE**
1—21¼" diameter x 7¼" face, 5 groove.
1—16½" diameter x 7½" face, 5 groove. (With clutch).

**DRYERS**
7—24" diameter x 48" face.
4—36" diameter x 72½" face, with gears and bearings.
1—48" diameter x 91" face.
1—36" x 142".
1—24' x 130".
3—36" diameter x 90" face.
3—36" diameter x 96½" face.
1—60" diameter x 47" face.
1—48" diameter x 70" face.
2—48" diameter x 92" face.
1—48" diameter x 82" face.
2—36" diameter x 76" face.
35—Dryers 36 x 20" diameter—complete.
7—Dryers 48 x 112" face.

**EMBOSSER**
1—84" Hudson Sharp Toilet Embosser Spare engraved roll.

**FELT CONDITIONER**
1—146" Nash Felt Conditioner.

**FLAT SCREENS**
1—6 plate Shartle Flat Screen.

**FRAMES**
Vertical frames for 100 dryers, 48" diameter, with bearings.

**JORDANS**
2—Noble & Wood Mammoth Junior.
1—Noble & Wood Mammoth Senior.
1—Emerson Jordan—25 to 30 tons capacity —iron plug including new spare iron plug.

**LABORATORY EQUIPMENT**
1—1½ lb. Valley Laboratory Beater with motor.
1—3' Shartle Hydrapulper, with motor.

**LIME SLUDGE FILTERS**
2—IMPCO Lime Sludge Filters, vacuum type, 5' diameter x 4' face.

**MISCELLANEOUS**
1—Caustic Mixer.

**MOTORS**
Write us regarding your requirements.

**PRESSES**
3—Sets Primary Presses, complete, 145" face. Anti-friction bearings. Also all types of rolls for 145" wet end.

**PULLEYS**
Various cone and assorted pulleys.

**PULP BALER**
1—140 ton hydraulic Pulp Baler. (Practically new).

**PULPERS**
1—Jones Pulper. Complete with motor and drive.
1—Noble & Wood Pulper—Iron Tub.

**PULP PRESSES**
2—Pulp Presses 76" wide (Camyr Type).

**PUMPS**
*Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.*

**REELS**
1—150" Pote Reel and 1—104" two bowl reel.
1—72" Beloit Reel.

**ROLLS**
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

**ROTARY SCREENS**
1—#2 Bird Rotary Screen.
1—#2A Bird Rotary Screen.

**SHEETERS**
1—136" Moore & White Sheeter, duplex with layboy.
2—36" Sheeters.
2—48" Sheeters.
2—50" Sheeters.

**SLITTERS AND WINDERS**
1—84" Cameron—Type 8-10.
1—72" Cameron—Type 10-5.
1—72" Cameron—Type 10-11 (Late type).
1—84" Cameron—Type 24-41.
1—42" Cameron—Type 40-4 R.
3—42" Cameron—Type 24-2-A.
1—42" Cameron—Type 9-5.
1—42" Cameron Constant Tension with pneumatic control.
1—115" 2 drum Waldron.
2—112" Cameron Type 18.

**OIL PUMPS**
1—10 x 20 Shartle Duplex.
1—7 x 16 Shartle Duplex.
3—7 x 16 Shartle Triplex.
1—10 x 20 Shartle Triplex.
2— 8 x 18 Shartle Duplex.
*Advise as to your requirements*

**SUCTION BOXES**
5—Suction Boxes, 82" drilled face x 6" wide.

**SUCTION COUCH ROLL**
1—247/8" diameter x 100" drilled face.
1—Sandusky 14.5" dia. x 103" drilled face.

**SUCTION PRESS ROLL SHELL (Only)**
1—29¾" diameter x 134" drilled face.

**VACUUM PUMPS**
1—#1 Nash Hytor.
1—#3 Nash Hytor and 1—#6 Nash Hytor.

**VAT**
1—Iron end Vat only, for decker or saveall, suitable for cylinder mold 36 x 130.

**WASHERS**
1—3 cylinder Washer 30" diameter x 75" cylinder mould.

**WAXING MACHINES**
1—72" Mayer Waxer.
1—80" Potdevin Waxing Machine.

**YANKEE DRYERS**
4—8 diameter x 176" ...
3—Yankee Dryers 84" diameter x 52, 53 and 62" face.

**We are always in the market to purchase your surplus or idle machinery. What have you to offer? Wanted Cylinder and Fourdrinier Machines (complete mills).**

Paddy Ross, Pres. **J. J. ROSS COMPANY** Ben Ross, Treas.
**250 Frelinghuysen Ave. Tel.—Bigelow 3-3720 Newark 5, N. J.**

## SITUATIONS WANTED

PRODUCTION MANAGER—Superintendent: —capable of all supervisory functions—production efficiency—product quality—maintenance —active, progressive, cooperative — experienced on sulphite, fine, groundwood, machine coating, printing and converting specialties—knowledge of printing and converting fields. Address Box 50-288 care Paper Trade Journal. J-29

## FOR SALE

FOR SALE—2 used 46-inch Waldron 6-brush coating units with complete festoon drying system and reelers. Good condition. Price reasonable. Address Box 50-253 care Paper Trade Journal. TF

FOR SALE—1—Used R.H. #1 and 1 used L.H. #2 Miami Jordans complete with Plugs. Priced to sell. Address Box 50-266 care Paper Trade Journal. J-15

FOR SALE—Used Samuel C. Rogers & Co. circular knife grinder, bench type with motor —grinder No. CC-1. Deltox Rug Company, Oshkosh, Wisconsin. J-22

## GOOD VALUES

### For the Paper Mill

50" Camachine model 6 Slitter.
48" Kidder model CH Slitter.
32" Cameron model 24-3A Slitter.
32" Hobbs Slitter.
82" Hamblet Sheeter with layboy.
58" Finley Sheeter.
50" Hamblet Sheeter.
36 x 48 one color and 3 color Kidder Rotary Presses.
Flat Cutters, both hand lever and Automatic from 26" to 50".

**Also many good values in Printing, Newspaper & Lithographing Equipment.**

**THOMAS W. HALL COMPANY, Inc.**
120 West 42nd St., N. Y. 18
(Plant at Stamford, Conn.) TF

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon, Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester, 11, N. Y. TF

## FOR SALE

62" Moore & White Sheeter—complete with Layboy and Backstand.

**WAXED PAPER MFG. CORP.**
175 Vanderpool Street, Newark, N. J.
Tel. Bigelow 8-4541 J-22

FOR SALE—One No. 8 Wellman Wood Grab. Capacity ½ cord 8 ft. wood. Excellent condition. Address Box 50-283 care Paper Trade Journal. J-29

FOR SALE—64" & 96" Beloit Rotary Sheeter with 6 roll stand and slitter station. 50" & 64" Seybold Paper Cutters; 28" x 41" Thomson Die Cutter. Address Box 50-259 care Paper Trade Journal. TF

## FOR SALE

One 75½ Reeves.
One 50 H.P. 1800 RPM General Electric Motor Both in excellent condition.

ALSO—
Two continuous cut off knives 78" wide. Suitable for cutting thicknesses up to .156". Address Box 50-290 care Paper Trade Journal. J-29

# FOR SALE

**PRESSES**

2—Presses with Rolls 18" x 97" complete with frames, felt rolls, stretches, etc.
2—Presses 18" x 108" complete with frames, felt rolls, etc.
1—27" x 148" face 1" new rubber pressure roll.
1—24" x 134" face rubber covered pressure roll with 2½" steel shell.
1—19¾" x 97" face brass press roll with anti-friction bearings.
1—17¼" x 160" Rubber covered press roll.

**CALENDERS**

1—87" face heavy duty stack, 7 rolls with 20" bottom, 1—15" 6—12" Dia., 3 rolls drilled for steam.
1—6 roll 82" stack bottom roll 16" 4-10" and 1—12" with drive.

**CYLINDERS AND FOURDRINIERS**

1—36" x 92" cylinder mould, cast iron end vat and rubber covered couch. All anti-friction bearings.
1—36" x 72" cylinder mould with 10" Dia. hollow shaft. Anti-friction bearings.
1—30" x 74" cylinder mould.
1—36" x 85" cylinder mould—NEW wires.
1—110" Moore & White Fourdrinier, 60 feet wire.

**COUCH ROLLS**

2—16" x 85" approximately 1" rubber covered.
1—15½" x 74" approx. 1" rubber covered.
1—14" x 93", 1¼" soft rubber covering.

**SCREENS**

2—No. 2 Bird Screens with copper vats.
2—Bagley & Sewall 12 plate flat screens.
4—Appleton 12 plate, plates cut .028.
1—Improved Packer 10 plate.
1—Improved Packer 8 plate.
1—Impco Rotary Knotter screen.

**REFINERS**

2—12" Weiner Refiners, anti-friction bearings.
1—Claflin Refiner.
1—Sturtevant Bale Pulper, anti-friction bearings, complete with conveyor and speed reducer.

**BEATERS**

1—Dilts Keyed type Bandless 62" Dia. x 48" Face.
1—Shartle 80" x 55" 100 T. Breaker Beater anti-friction bearings.
1—E.D. Jones 67" x 60".
1—E.D. Jones 65" x 62".

**CENTRIFUGAL PUMPS**

5—Shartle low head white water pumps 8 x 6.
2—Warren Low head size 6 DS 15½ 800 G.P.M. @ 22' head.
2—Warren Size 4SOD12 anti-friction bearings 200 G.P.M., 50' head.
1—Domestic 4 x 4 sludge or heavy density stock pump 200 G.P.M. 50' head.
1—Deming Sump pumps direct connected to motor, 75 G.P.M. @ 45' head.

**SUCTION ROLL AND SUCTION BOXES**

1—10" x 134" Downingtown suction felt roll 130" drilled face.
13—brass suction boxes
3—154" 2—110" 2—90" 2—108" 4—96"

**WINDERS**

1—Moore & White 4 drum 126", anti-friction bearings. Slitter attachment.
1—116" Two drum winder Cameron type.
2—Bagley & Sewell Warren type, 1—116", 1—110".

**TRIMMERS**

1—Holyoke 54" complete with motor starting equipment.
1—Smith & Winchester 56" undercut trimmer. Very good.

**CUTTERS & LAYBOYS**

1—Beloit Duplex Sheet cutter 102" with duplex slitting equipment.
1—Moore & White Layboy, four pile, three section for 102" trim.

**TABLE & FELT ROLLS**

6—NEW 5⅛" Dia. table rolls x 98" Face.
24—NEW 3½" Dia. table rolls x 111" Face.
10—NEW 6" Dia. brass Felt Rolls 84" Face.
10—NEW 6" Dia. brass Felt Rolls 96" Face.
10—NEW 7" Dia. brass Felt Rolls 120" Face.

**OSBORNE**
**PAPER MILL EQUIPMENT CORP.**
**FULTON, N. Y.**
J-15

## FOR SALE

**FOR SALE**

Quick Acting Valves, 3 way, from 8" to 20". Stock Valves, 8" to 20".

**J. J. ROSS COMPANY**
250 Frelinghuysen Ave. Newark 5, N. J.
Tel. Bigelow 3-3720 J-15

**FOR SALE**

Black-Clawson Stacked Frames for 100 dryers—48" diameter—with bearings.

**J. J. ROSS COMPANY**
250 Frelinghuysen Ave., Newark 5, N. J.
Tel. Bigelow 3-3720 J-15

**FOR SALE**

110" Slitter & Rewinder.

**WAXED PAPER MFG. CORP.**
175 Vanderpool Street, Newark, N. J.
Tel. Bigelow 8-4541 J-22

**NORDBERG UNIFLOW ENGINE GENERATORS**

2—750 KW used Allis-Chalmers generators, 440 volt, 3 phase, 60 cycle, direct connected to Nordberg poppet valve Uniflow engines. All operating equipment.

1—1000 HP used Erie City Boiler, three drum, 200 lbs. pressure. All operating equipment. New in 1945.

**DIESEL GENERATING PLANT**

300 HP used Fairbanks-Morse Diesel Engine, model 32-E-14, serial #795310, direct connected to 200 KW Fairbanks-Morse generator, 240 volt, 3 phase, 60 cycle, (can be reconnected to 440 volt). Switch gear, starting equipment, etc.

**DENNY & CLARK**
1923 W. North Avenue, Chicago 22, Ill.
J-15

**FOR SALE**

84" Late Type Camachine 10-14 with cooled tension.
72" Seybold 20th Century Power Paper Cutter.
36" Beck Rotary Sheet Cutter. Equipped with electric eye.
Brand new machine.
Address Box 50-294, care Paper Trade Journal. J-15

**FOR SALE OR LEASE**—Paper Board Mill with five cylinder machine, 64" trim. Situated advantageously to sources of raw material and sales outlets. Ample room for converting plant on premises. Address Box 50-244 care Paper Trade Journal. TF

**FOR SALE**

Fourdrinier type left hand paper machine, Beloit Fourdrinier Port new 1938, Voith high pressure inlet, Nash automatic wire guide, 25" suction couch, 1st and 2nd press 22" Suction Press, 24" & 26" dia. roll smoothing press, 32 dryers 48 x 86", Farrell calender, pope-reel. Now operating at 750 feet per minute.

One Jones 70" x 48" breaker beater, iron tub, built in 1943, with stainless steel bars, in excellent condition. Immediate delivery.

1—5' x 8' Vacuum Sludge Filter.
1—90" Super-Calender.

**Frank H. Davis Company, 175 Richdale Ave., Cambridge 40, Mass. J-22**

**FOR SALE**—Garment Bag Machine. Extremely simple to operate. Makes 36" and 54" Bags only. Speed 50 bags per minute. No printer on machine. Priced to sell. GORDY PAPER AND BAG CORPORATION, P. O. Box 127, Milford, Indiana. J-6

## FOR SALE

**MODERNIZE YOUR PAPER MACHINES WITH ENCLOSED DRIVES.**

**FOR SALE**

**FALK MOTOR REDUCERS**

Motor driven Falk Drives with 50 KW Generator, convertor set and panel control.

1—7½ h.p. 45-1 connected to DC motor.
2—5 h.p. 63-1 connected to DC motor.
2—7½ h.p. 23.4-1 connected to DC motor.
2—15 h.p. 38.6-1 connected to DC motor.

**FALK HERRINGBONE DOUBLE REDUCTION PAPER MACHINE DRIVES.**

4—Right Angle, ratio 6.31, h.p. 48 to 110 depending on input speed.
1—Right Angle, ratio 7.14, h.p. 129 to 276 depending on input speed.
1—Straight Drive, ratio 3.12, h.p. 150.
1—Straight Drive, ratio 1.97, h.p. 250.

**ROSS PAPER MACHINERY COMPANY**
265 Passaic Street Newark, N. J.
Tel. HUmbolt 2-2177 J-15

## WANTED

**WANTED**

Two or three color roll to roll aniline printing press of any standard make. Address Box 50-287 care Paper Trade Journal. J-15

**WANTED**

One embosser and folding unit for table covers. Must accommodate minimum 54" width web and up to 108" cut off with 6" — 7" or 8" wide zig zag fold. Advise full particulars and sample of fold.
Address Box 50-291 care Paper Trade Journal. J-15

**WANTED:**
**SMALL PAPER TESTING LABORATORY**

Itemize machines, condition, age, and price wanted.

Reply Box 50-289 care Paper Trade Journal. J-15

**WANTED**
**FOR EXPORT**

Complete Plant for manufacturing Sewed Multiwall Sacks, for packing Fertilizers, Cement, Lime, etc.
Box 50-273 Paper Trade Journal. J-22

WANTED—One Hamblet revolving cutter—60" to 68" knife. Other makes considered.
One Nash Vacuum Pump, No. L-4.
One Cameron Winder, 62", No. 10 or better. Advise condition and best prices. Advise Diam. Rolls it will make.
1—68" to 70" face by 36" diameter Dryer.
2—60" to 62" face by 36" diameter Dryers.
Address Box 50-226 care Paper Trade Journal. TF

**WANTED**—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 50-18 care Paper Trade Journal. TF

## WANTED

**WANTED TO BUY FOR EXPORT**
**CYLINDER BOARD MACHINE**

Having Trim of About 132 Inches
Also Machines of Trim of About 90 Inches
Send Offers Giving Fullest Details of Plant and Equipment Available
Address: Box No. 50-274, c/o Paper Trade Journal J-15

**WANTED**—Used Canadian Standard or S/R Freeness Tester and Elmendorf Tear Tester. Advise condition and price. Address Box 50-293 care Paper Trade Journal. J-22

**WANTED**—Brightwood Box Machine, Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 50-193 care Paper Trade Journal. TF

**WANTED**—Will contract with responsible parties to produce paperboard to specifications on our five cylinder paperboard machine. Address Box 50-245 care Paper Trade Journal. TF

**WANTED**—Jonsson Screens suitable 20 to 50 tons stock. Address Box 50-161 care Paper Trade Journal TF

**CLASSIFIED ADS BRING RESULTS**

*On Sale*

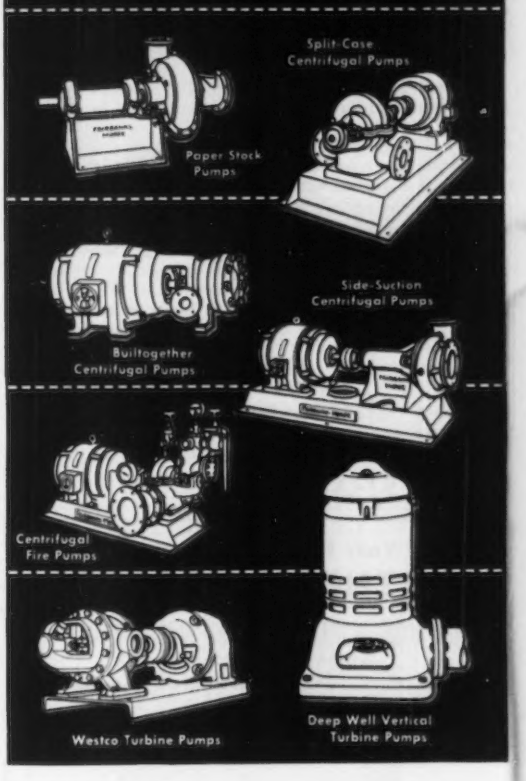
# 1950
# 75th ANNUAL EDITION

## LOCKWOOD'S DIRECTORY OF THE PAPER AND ALLIED TRADES
## GUIDE TO THE PAPER INDUSTRY

SEND IN YOUR ORDER TODAY IF YOU HAVE NOT ALREADY DONE SO

**Published by Lockwood Trade Journal Co.**
**15 West 47th Street, New York 19, N. Y.**

THE
# Performance Line in Pumps




Whatever you want in pumps . . . water supply, circulating, paper stock, fire protection, cooling . . . you'll find the *efficient* answer in the broad Fairbanks-Morse line. The name Fairbanks-Morse is your assurance of performance . . . of reduced maintenance and operating costs. For pump assistance, see your Fairbanks-Morse Pump Dealer, local branch, or write to Fairbanks, Morse & Co., Chicago 5, Ill.

**FAIRBANKS-MORSE,**
***a name worth remembering***

DIESEL LOCOMOTIVES • DIESEL ENGINES • STOKERS • SCALES • MOTORS • GENERATORS
PUMPS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS

The routine use of this Indicator can save time and money in any pressroom by eliminating a common cause of "off register" and other pressroom troubles. The Cambridge Printer's Moisture Indicator is accurate and rugged; simple and convenient to use: First, an index pointer is set at the humidity of the pressroom air as shown on the Indicator's scale. Then the perforated metal blade which encloses the measuring element is inserted between the stock or hung sheets; in less than a minute, the moisture content of the paper is shown. With this information, the pressman can tell at once whether the paper is ready to run.

*Send for literature*

**CAMBRIDGE**
INSTRUMENT COMPANY, Inc.
3702 Grand Central Terminal, New York 17, N. Y.
*Pioneer Manufacturers of*
PRECISION INSTRUMENTS

**For Your Engraving Needs Use**
**NORTHERN ROLLERS**
Engraved by
**NORTHERN ENGRAVING AND MACHINE COMPANY**
**Green Bay, Wisconsin**

BUY UNITED STATES
SAVINGS BONDS

**CONVERT STARCH with**
**AMYLIQ®**
*A Highly Purified Enzyme Product*
**Quality with Economy**
WALLERSTEIN COMPANY, INC. • 180 MADISON AVE., NEW YORK

**CALENDER & EMBOSSING ROLLS**
**BUILT–REBUILT–RECONDITIONED**

Building the finest calender and embossing rolls to your specifications is a Wheeler specialty—backed by 20 years experience. Calender and embossing rolls up to 240 inches built or reconditioned. Complete technical department at your service.

**THE WHEELER ROLL CO.**
1910 LANE BLVD. KALAMAZOO, MICH.

*The Trade-Mark of*
*Dependable Felts*
**The Waterbury Felt Company**
**SKANEATELES FALLS, N. Y.**

**Gotham Gravure Inks**
5-19 47th Avenue,
Long Island City 1, N. Y.

- Design & Construction of Pulp and Paper Mills
- Steam and Hydro-Electric Power Plants
- Power Studies
- Reports and Appraisals
- Extensions and Alterations

EBASCO — ENGINEERS · CONSTRUCTORS · BUSINESS CONSULTANTS

**EBASCO SERVICES**
INCORPORATED
Two Rector Street, New York 6, N. Y.
Digby 4-4400

## WHERE TO BUY

### ABRASIVES
Monsanto Chemical Co.
Norton Co.

### ADHESIVES
American Anode Incorporated
American Cyanamid Company Plastics & Resins Division
E. I. Du Pont De Nemours & Co., Inc.
The Goodyear Tire & Rubber Company
Monsanto Chemical Co.
National Starch Products, Inc.
Nopco Chemical Co.
Stein, Hall & Co., Inc.

### AGITATORS
American Paper Machy. & Engrg. Works, Inc.
Appleton Machine Co.
Dilts Machine Works, Inc.
Dorr Company
Downingtown Mfg. Co.
Hardinge Company, Inc.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.
Shartle Brothers Machine Co.

### ALLOYS
Michigan Steel Casting Co.

### ANTIFOAM
American Cyanamid Company Industrial Chemicals Division
National Aluminate Corp.
Nopco Chemical Co.

### APRON CLOTH
Williams-Gray Co.

### BAG MACHINES
Dilts Machine Works
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Smith Winchester Mfg. Co.
Weber, Herman G., & Co., Inc.

### BARK BURNER
Nichols Engrg. & Research Corp.

### BARK PRESS
American Defibrator Co.

### BARKERS AND CHIPPERS
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

### BARS
Dilts Machine Works
E. D. Jones & Sons Co.
The Moore & White Co.
Shartle Brothers Machine Co.
Stephens-Adamson Mfg. Co.
Valley Iron Works Co.

### BASIC WEIGHT SCALES
Thwing-Albert Instrument Co.

### BEARINGS
Black Clawson Company
E. D. Jones & Sons Co.
Link Belt Company
Magnus Metal Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Timken Roller Bearing Co.
Valley Iron Works Co.

### BEATERS AND JORDANS
American Paper Machy. & Engrg Works, Inc.
The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Morden Machines Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

### BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lukenweld Div., Lukens Steel Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

### BELTING
Alexander Brothers
Allis-Chalmers Mfg. Co.
The Cincinnati Rubber Mfg. Co
The Goodyear Tire & Rubber Company
Link Belt Company
J. E. Rhoads & Sons

### BLEACHING AGENTS
E. I. Du Pont De Nemours & Co., Inc.
General Dyestuff Corp.
Rohm & Haas Co.
Virginia Smelting Co.

### BLEACHING BOILERS, ROTARY
The Biggs Boiler Works Co.

### BLEACHING APPARATUS
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

### BLOW PIPES & PITS
Carthage Machine Co.
Kalamazoo Tank & Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

### BOILERS
Babcock & Wilcox Co.
The Biggs Boiler Works Co.

### BOTTOMS
Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

### BOXBOARD SCALES
Thwing-Albert Instrument Co.

### BRUSH ROLLS
M. W. Jenkins Sons, Inc.

### BRUSHES
M. W. Jenkins Sons, Inc.

### BURSTING TESTERS
B. F. Perkins & Son Inc.
Testing Machines, Inc.

### CALENDERS
Black Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Co.
Edward J. McBride
The Moore & White Co.
Perkins & Sons, Inc., B. F.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

### CARRIER ROPE
Williams-Gray Co.

### CASEIN
American Cyanamid Co., Industrial Chem. Div.
Bunge Pulp & Paper Co.
Hercules Powder Co.

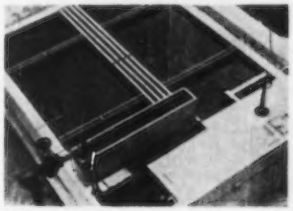
### CASTINGS
American Cast Iron Pipe Co.
Appleton Machine Co.
Black Clawson Company
Babcock & Wilcox Co.
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Hamblett Machine Co.
Hardinge Company, Inc.
Lobdell Co.
Magnus Metal Corp.
Michigan Steel Casting Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.


# SPOTTY PAPER...

## *can mean "SPOTTY" profits*

You may be doing everything you can to assure the high quality of the pulp and paper you produce ... and yet still be getting troublesome "dark spots" on your product. These spots and speckles that mar even the best products are most often the result of dirt, iron, and other impurities in *process* water.

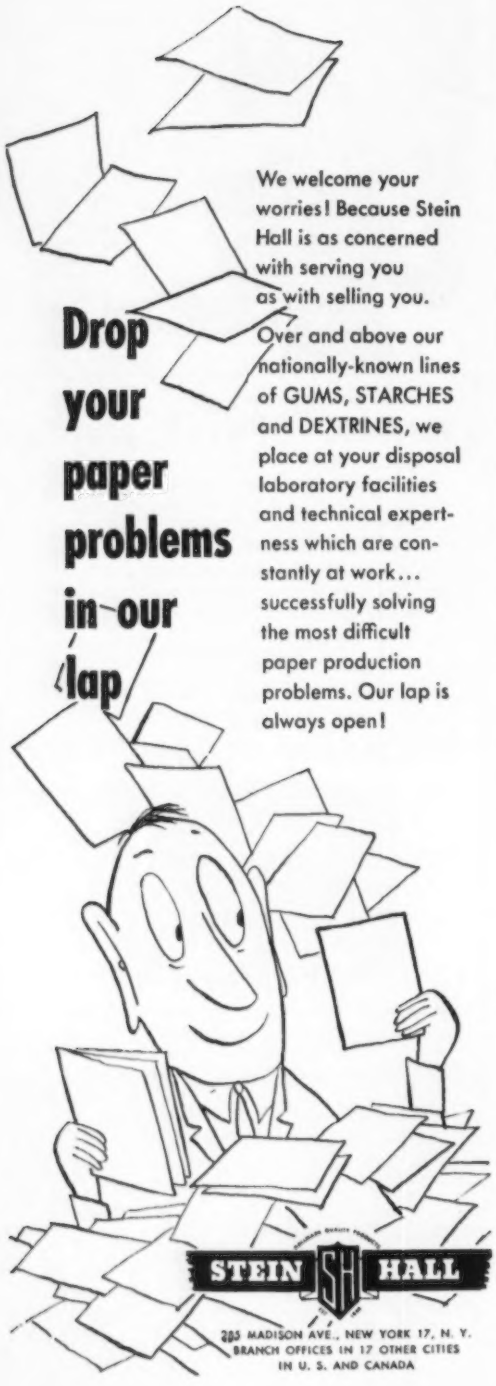
*Make sure of*
PAPER QUALITY
*with*
*Permutit Precipitator*



Equipment designed to your needs gives you complete control of water quality at all times. Purify the water you use and watch your profit curve prosper! Write to The Permutit Co., Dept. PT-5, 330 West 42nd St., New York 18, N. Y., or to Permutit Co. of Canada, Ltd., 6975 Jeanne Mance Street, Montreal, P. Q.

Permutit®

**Water Conditioning Headquarters for Over 37 Years**


Drop your paper problems in our lap
We welcome your worries! Because Stein Hall is as concerned with serving you as with selling you.
Over and above our nationally-known lines of GUMS, STARCHES and DEXTRINES, we place at your disposal laboratory facilities and technical expertness which are constantly at work... successfully solving the most difficult paper production problems. Our lap is always open!
STEIN SH HALL
285 MADISON AVE., NEW YORK 17, N. Y.
BRANCH OFFICES IN 17 OTHER CITIES IN U. S. AND CANADA

Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Walworth Company

### CENTRIFUGAL MACHINERY

Bird Machine Co.
Nichols Engrg. & Research Corp.
Ross, J. O., Engrg. Co.
Shartle Brothers Machine Co.

### CHAINS

Link Belt Company

### CHEMICAL COTTON PULP

Hercules Powder Co.

### CHEMICALS

American Anode, Incorporated
American Cyanamid Co., Industrial Chem. Div.
Bunge Pulp & Paper Co.
Calco Chemical Co.
Calgen, Inc.
Cowles Chemical Company
Diamond Alkali Co.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
Gottesman & Co.
Hercules Powder Co.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Niagara Alkali Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Rohm & Haas Co.
Solvay Sales Corp.
Virginia Smelting Co.
Wyandotte Chemical Co.

### CHESTS

E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
Shartle Bros. Mch. Co.

### CHUCKS

Efficiency Engrg. Co.

### CLEANING MATERIALS

American Cyanamid Company Industrial Chemicals Division
Cowles Chemical Company
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co.
Solvay Sales Corp.
Wyandotte Chemicals Corp., J. B. Ford Division

### CLUTCHES

Appleton Machine Co.
Black Clawson Company
Farrel-Birmingham Co.
Hardinge Company, Inc.
Hudson Sharp Machine Co.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.

### COATING MACHINERY

Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Hudson Sharp Machine Co.
The Mayer Machine Co., Inc.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

### COATING MATERIALS

American Anode Div.
American Cyanamid Company Industrial Chemicals Division
E. I. Du Pont De Nemours & Co., Inc.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
National Wax Co.
Nopco Chemical Co.

### COGS

The N. P. Bowsher Co.

### COMPOUND LATICES

American Anode Div.

### COMPRESSORS

Allis-Chalmers Mfg. Co.
Nash Engineering Co.
Roots-Connersville Blower Corp.

### CONDENSATE FILTERS

Hungerford & Terry, Inc.

### CONSISTENCY REGULATORS

Bird Machine Company
DeZurik Shower Company
Paper & Industrial Appliances

### CONSTRUCTION CONTRACTORS

C. M. Guest & Sons

### CONSULTING ENGINEERS

Birk, F. Paul
Black Clawson Company
Dilts Machine Works
Ebasco Services
Frank W. Egan & Co.
Gibbs, Ralph
Alvin H. Johnson & Co., Inc.
Main, Inc., Chas. T.
Roderick O'Donoghue
The Rust Engrg. Co.
Shartle Bros. Mch. Co.
J. E. Sirrine & Co.
John Waldron Corp.
H. G. Weber & Co., Inc.

### CONTINUOUS DIGESTER

Paper & Industrial Appliances

### CONTROLLERS

Askania Regulator Company
Black Clawson Company
The Brown Instrument Co.

### CONTROLS

Askania Regulator Company
The Bristol Company
The Brown Instrument Co.
Johnson Corp.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

### CONVERTING MACHINERY

Suburban Machine Co.
John Waldron Corp.

### CONVEYORS

Black Clawson Company
Industrial Brownhoist Corp.
Link Belt Company
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.
Stephens-Adamson Mfg. Co.

### CORES

Elixman Paper Co.
Rodney Hunt Machine Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.

### CORROSION RESISTANT

Amercoat Corporation

### COUPLINGS

Black Clawson Company
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Thomas Flexible Coupling Co.
Valley Iron Works
Waldron Corp., John

### CRANES

Cleveland Crane & Engrg. Co.
Industrial Brownhoist Corp.
Link Belt Company
Whiting Corp.

### CURL TESTER

Thwing-Albert Instrument Co.

### CUTTERS

Black Clawson Company
Dilts Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
The Sandy Hill Iron & Brass Works
The Smith & Winchester Mfg Co.
Taylor, Stiles & Co.

## WHERE TO BUY

### CYLINDERS
M. W. Jenkins Sons, Inc.
National Tube Co.

### DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

### DECKLE WEBBING
Williams-Gray Co.

### DEFIBRATORS
American Defibrator Co.

### DE-INKING
Dilts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
Roderick O'Donoghue
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

### DEINKING CHEMICALS
E. I. Du Pont De Nemours & Co., Inc.
General Dyestuff Corp.
Kinsley Chemical Co.
Monsanto Chemical Company
Nopco Chemical Co.

### DE-MINERALIZING EQUIPMENT
Hungerford & Terry, Inc.

### DENSOMETERS
Bunge Pulp & Paper Co.
W. & L. E. Gurley

### DESIGN CONSTRUCTION
Ebasco Services

### DETERGENTS
American Cyanamid Company Industrial Chemicals Division
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

### DEWAXING CHEMICALS
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

### DIFFERENTIAL SCALES
Thwing-Albert Instrument Co.

### DIGESTERS
Babcock & Wilcox Co.
Chicago Bridge & Iron Co.
Lukenweld
Pusey & Jones Corp.

### DIGESTERS (Continuous)
Paper & Industrial Appliances

### DIRTEC
Bird Machine Co.

### DISPERSING AGENTS
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

### DOCTORS
Bird Machine Company
Black Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

### DOCTOR BLADES
Bird Machine Company
Lodding Engrg. Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

### DRIERS
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Hardinge Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
The Youngstown Welding & Engrg. Co.
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

### DRYER DRAINAGE
Stickle Steam Specialties Co.

### DRYER ROLL PYROMETER
Thwing-Albert Instrument Co.

### DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

### DUSTING BRUSHES
M. W. Jenkins Sons, Inc.

### DYESTUFFS
American Cyanamid Company, Calco Chemical Div.
Bunge Pulp & Paper Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.

### ELECTRIC HYGROMETER
Thwing-Albert Instrument Co.

### EMBOSSING MACHINES
Dilts Machine Works
John Waldron Corp.

### EMBOSSING ROLLS
The Appleton Machine Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Northern Engraving & Mch. Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.

### EMULSIFIERS
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

### ENZYMES
Rohm & Haas Co.
Pillsbury Mills, Inc.
Vanderbilt Co., R. T.

### EVAPORATORS
Davis Engrg. Corp.
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

### EXPANDERS
Mount Hope Machinery Co.

### FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.
Stephens-Adamson Mfg. Co.

### FEEDERS
Hardinge Company, Inc.
Merrick Scale Mfg. Co.
Leeds & Northrup

### FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co.


TAYLOR, STILES & COMPANY
TRADE MARK
GIANT
REG. U.S. PAT. OFF.
RIEGELSVILLE, N.J. U.S.A.

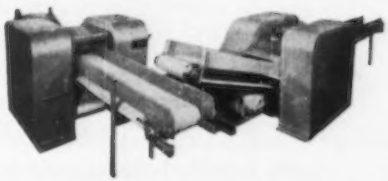
*Both Large and Small Paper Mills Use —*

**TAYLOR-STILES RAG CUTTERS**

**The size range of these efficient cutting machines—one ton to five tons an hour—provides for all capacity needs of paper manufacture.**

**TYPICAL TAYLOR-STILES CUTTERS ARE—**

**NO. 1 RAG CUTTER**—Capacity, one ton an hour. This fine machine compares in every way with our big five-tons-an-hour cutters.



**NO. 36 TANDEM RAG CUTTER**—Cross cuts the rags for greater uniformity in the size of cuttings. Capacity one and one half tons an hour.

*Send for facts about the Taylor-Stiles rag cutter to meet your quantity requirements.*

**10 Bridge St., Riegelsville, N. J.**

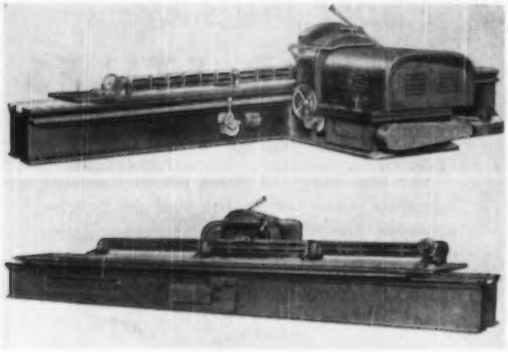
TAYLOR-STILES Company
CUTTING MACHINES & KNIVES

# SAVINGS FOR YOU

## . . . In Valuable Man Hours

The faster—more efficient operation of the Bridgeport 174 Knife Grinder means definite savings in man hours. High table speeds, automatic feed, and heavy rigid construction assure uniformly sharp edges in less time—particularly when grinding high carbon, high chrome knives.

Model 174 grinds knives from 66 to 240 inches long.



### FASTER EASIER GRINDING

Table speed of 60 feet per minute—automatic feed .0002 to .004 per pass—hydraulic controlled multiple disc clutch—operator has view of work from centralized control position.

### ACCURATE SAFE GRINDING

Timken roller bearing spindle—sectional grinding wheel—wheel dresser—Bijur pressure lubricated Vee bed and flat way—choice of mechanical or magnetic chuck—oversize coolant tank with centrifugal pump—rugged heavy construction throughout.

**Add these advantages and savings to your production line . . .**

Write Today for further technical data or a survey of your plant by a factory representative.

THE BRIDGEPORT

**SAFETY EMERY WHEEL CO., INC.**

**P.O. Box 427, Stratford, Connecticut**


## WHERE TO BUY

**FELT CLEANERS**
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Nopco Chemical Co.

**FELT CONDITIONERS**
Bird Machine Co.
The Sandy Hill Iron & Brass Works

**FELT GUIDES**
Black Clawson Company
Frank W. Egan & Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

**FILLERS**
American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.

**FILTERS**
Bird Machine Company
Hardinge Company, Inc.
J. M. Huber Corp.
Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

**FITTINGS**
Crane Company
Shartle Bros. Mch. Co.
Walworth Company

**FLEXIBLE COUPLINGS**
John Waldron Corp.

**FLOORING, GRATING AND TREADS**
The Goodyear Tire & Rubber Company
Norton Co.

**FLOW BOXES, STAINLESS-CLAD**
Lukens Steel Co.
The Sandy Hill Iron & Brass Works

**FORK LIFT TRUCKS**
Towmotor Corp.

**FORMATION**
Thwing-Albert Instrument Co.

**FORMING MACHINES**
Black Clawson Company
Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

**FREENESS TESTERS**
Testing Machines, Inc.

**GASKETS**
The Goodyear Tire & Rubber Company

**GEARS**
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

**GRINDERS**
Bridgeport Safety Emery Wheel Company
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

**GRINDING WHEELS**
Norton Company

**GUIDES, WEB**
The Moore & White Co.
Mount Hope Machinery Co.
Bound Brook Engrg. Co.
John Waldron Corp.

**GUMMING MACHINES**
Dilts Machine Works
The Sandy Hill Iron & Brass Works

**GUMS**
National Starch Products, Inc.
Stein-Hall Co., Inc.

**HEADS**
Babcock & Wilcox Co.
Lukens Steel Company

**HEAT EXCHANGERS AND RECOVERY SYSTEMS**
Davis Engrg. Corp.
Stickle Steam Specialties Co.
Westinghouse Electric Corp.

**HEATING, VENTILATING & AIR CONDITIONING**
The Appleton Machine Co.
Davis Engrg. Corp.
E. D. Jones & Sons Co.
General Electric Co.
Leeds & Northrup
Minneapolis-Honeywell Regulator Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

**HOSE (Air, Water, Suction, etc.)**
The Goodyear Tire & Rubber Company

**HUMECTANTS**
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.

**IMPREGNANTS**
American Cyanamid Company Industrial Chemicals Division
American Anode Div.

**INDENTING MACHINES**
Dilts Machine Works

**INDUSTRIAL TRACTORS**
Towmotor Corp.

**INKOMETER**
Thwing-Albert Instrument Co.

**INSTRUMENTS, TESTING AND MEASURING**
Bauer Brothers Co.
Bunge Pulp & Paper Co.
N. P. Bowsher
The Bristol Company
The Brown Instrument Co.
General Electric Company
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Photovolt Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

**JOINTS**
Johnson Corp.
Perfecting Service Corp.
Shartle Bros. Mch. Co.

**JORDAN FILLINGS**
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

**KNIVES**
Black Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
Heppenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Taylor Stiles & Co.
Valley Iron Works Co.

**KNOT BORING MACHINES**
DeZurik Shower Company

**LABORATORY CORRUGATOR**
Thwing-Albert Instrument Co.

**LABORATORY EQUIPMENT**
Appleton Machine Co.
Bauer Brothers Co.
The Biggs Boiler Works Co.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories

## WHERE TO BUY

**Taylor Instrument Companies**
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.

**LAMINATING COMPOUND**
National Wax Company

**LAMINATING MACHINES**
Dilts Machine Works
John Waldron Corp.

**LAY BOYS**
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

**LUBRICANTS**
Sinclair Refining Co.
Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

**MAGAZINE REELS**
Dilts Machine Works (Kohler Systems)

**MATERIALS HANDLING**
Cleveland Crane & Engrg. Co.
Dilts Machine Works
Frank G. Hough Co.
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.
The Wellman Engrg. Co.

**MICROMETERS & CALIPERS**
Farrel-Birmingham Co.
Lobdell Co.
Testing Machines, Inc.

**MICRO-CRYSTALLINE WAXES**
Bunge Pulp & Paper Co.
National Wax Company

**MOISTURE CONTENT CONTROL**
Stickle Steam Specialties Co.

**MOTORS AND GENERATORS**
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.
General Electric Company
Reliance Electric & Engrg. Co.

**NICKEL AND NICKEL ALLOYS**
The International Nickel Co.

**NOZZLES**
Link Belt Company

**PACKING BOXES**
Johnson Corporation
The Moore & White Co.
Perfecting Service Corp.
Shartle Brothers Machine Co.

**PAPER MACHINES**
Bagley & Sewall Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Moore & White Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

**PAPER MACHINE SLICES**
Black Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

**PAPER TUBE MACHINERY**
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.

**PARAFFINE WAXES**
National Wax Company

**PARAFFIN WAX EMULSIONS**
Nopco Chemical Co.

**PASTING MACHINES**
Black Clawson Company
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

**PERFORATED METAL**
Allis-Chalmers Mfg. Co.

**PETROLATUMS**
National Wax Company

**pH METERS**
Thwing-Albert Instrument Co.

**PIGMENTS**
Ferro Enamel Corp.

**PIPE**
American Cast Iron Pipe Co.
Armco Drainage & Metal Products, Inc.
Babcock & Wilcox Co.
Crane Company
Michigan Pipe Co.
Michigan Steel Casting Co.
National Tube Co.
Walworth Company
Youngstown Welding & Engrg Co.

**PIPE FITTINGS**
Armco Drainage & Metal Products Co.
Crane Company
Michigan Steel Casting Co.
Walworth Co.

**PIPE MARKERS**
W. H. Brady Co.

**PITCH CONTROL**
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

**PLASTICIZERS**
American Cyanamid Company Industrial Chemicals Division
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.

**PLATERS**
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

**PLATES**
Armco Steel Corp.
Babcock & Wilcox Co.
The Biggs Boiler Works Co.
J. O. Ross Engrg. Corp.
Lukenweld Division
Lukens Steel Company
Timken Roller Bearing Co.

**PLUGS**
The Appleton Machine Co.
Black Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

**PRECISION SAMPLE CUTTER**
Testing Machines, Inc.
Thwing-Albert Instrument Co.

**PRESERVATIVES**
E. I. du Pont de Nemours & Co
General Dyestuff Corp.

**PRESSURE VESSELS STEEL AND ALLOY**
Babcock & Wilcox Co.
The Biggs Boiler Works Co.

**PRESSURE VESSELS**
Chicago Bridge & Iron Co.

**PRESSES**
Black Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
The Moore & White Co.
Paper Converting Machine Co Inc.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

**PULP CLASSIFIER**
The Bauer Bros. Co.
Thwing-Albert Instrument Co.

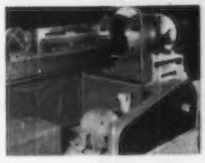
**PULP CLEANERS**
Nichols Engrg. & Research Corp.

**PULP STOCK VALVES**
Crane Company
Record Pdy. & Mach. Co.
Shartle Brothers Machine Co.

**PULPERS**
American Paper Machy. & Engrs Works, Inc.
Bauer Brothers Co.
Dilts Machine Works
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

**PULPS**
Brown Company
Bunge Pulp & Paper Co.
Gottesman & Co., Inc.
Elof Hansson, Inc.
Lyddon & Co. (America), Inc
Parsons & Whittemore, Inc.

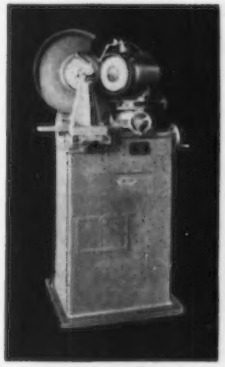

# Keep YOUR PRODUCTION COSTS DOWN ...with Better Knife Maintenance



**ROGERS 220 Series Heavy Duty KNIFE GRINDER**

Sharp knives . . . mean uninterrupted production . . . mean dollars saved. This husky 220 series grinder with its massive 7 ton weight, assures long, continued precision grinding. Two motors . . . 15 H.P. for grinding head . . . separate variable speed reversing motor drive to table . . . cool, self dressing segmental grinding wheel . . . automatic force feed oiling . . . coolant pump and motor and large coolant settling tank . . . plus many other features add up to give you efficient accurate sharpening of any straight knife, thick or thin. Series 220 includes eight sizes between 78 and 220 inches. Send coupon below for details.

**CC-3 CIRCULAR KNIFE & SLITTER GRINDER**



This versatile grinder accurately handles any splitting knife, circle and ring shear, circular knife, double bevel or bottom slitter up to 20" in diameter. Among the many attachments available is a magnetic chuck that cuts knife mounting time and boosts production of your grinding room. The CC-3 enables you to have sharp knives on the spot when you need them . . . cut knife inventory . . . and keep production equipment at 100% cutting efficiency.

**TEAR OUT COUPON AND MAIL TODAY**

**SAMUEL C. ROGERS & CO.**
**202 Dutton Avenue**
**Buffalo 11, N. Y.**

Gentlemen:
Please send me further information on
☐ 220 Series Grinder. Our knives are ...." long.
☐ CC-3 Knife & Slitter Grinder. Our knives are ...." dia.

Firm .....
Address .....
City ..... ☐ State .....
Attention of .....

**RESTIGOUCHE**

**BLEACHED SULPHITE PULP**

*for the manufacture of Cellophane, Rayon and Products of Paper.*

Restigouche

BLEACHED SULPHITE PULP

**RESTIGOUCHE COMPANY, LTD.**

**Campbellton, N. B., Canada**

## WHERE TO BUY

### PULPS

Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
Pulp Sales Corp.
Restigouche Co., Ltd.

### PULPSTONES

Norton Company

### PUMPS

American Paper Machy. & Engrg. Works, Inc.
Allis-Chalmers Mfg. Co.
Black Clawson Company
DeLaval Steam Turbine Co.
Dorr Company
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Gibbs-Brower Company, Inc.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Roots Connersville Blower Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company

### RADIANT BURNERS

Red-Ray Mfg. Co., Inc.

### RAG COOKING PROCESSES

The Kinsley Chemical Company
General Dyestuff Corp.
Rohm & Haas Co.

### RAG CUTTERS

Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

### RECAUSTICIZING PLANTS

The Dorr Company

### RECOVERY SYSTEMS

Babcock & Wilcox Co.
Bulkley, Dunton Pulp Co., Inc.
Chicago Bridge & Iron Co.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

### REELS

The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works (Kohler Systems)
Downingtown Mfg. Co.
Hudson Sharp Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

### REFINERS

Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
Anton J. Haug
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sutherland Refiner Corp.
Valley Iron Works

### REGULATORS

American Paper Machy. & Engrg. Works, Inc.
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Bristol Company
DeZurik Shower Company
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
Minneapolis-Honeywell Regulator Co.
National Technical Laboratories
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Wallace & Tiernan

### RESINS

American Cyanamid Company, Plastics & Resins Division
The Dow Chemical Company
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co., Resinous Products Div.

### ROLLS

Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
The Moore & White Co.
D. J. Murray Mfg. Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
U. S. Rubber Co.
Valley Iron Works Co.
Waldron Corp., John
The Youngstown Welding & Engrg. Co.

### ROLL COVERS

The Cincinnati Rubber Mfg. Co.
The Goodyear Tire & Rubber Company
Stowe-Woodward, Inc.

### ROLL HANDLING EQUIPMENT

Dilts Machine Works (Kohler Systems)

### ROLL STANDS

Cameron Machine Co.
Dilts Machine Works (Kohler Systems)
Frank W. Egan & Co.
Moore & White Co.
Potdevin Machine Co.
John Waldron Corp.
H. G. Weber & Co., Inc.
The Sandy Hill Iron & Brass Works

### ROPE CARRIERS

Black Clawson Co.
The Moore & White Co.
The Sandy Hill Iron & Brass Works

### ROTARY STEAM JOINTS

Johnson Corp.
The Moore & White Co.
Perfecting Service Corp.
Shartle Bros. Mch. Co.

### RUBBER PRODUCTS

The Goodyear Tire & Rubber Company

### SATURANTS

American Anode Div.

### SATURATING MACHINES

Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

### SAVEALLS

Bird Machine Company
Chicago Bridge & Iron Co.
Green Bay Fdy. & Mch. Wks.
Hardinge Company

### SCALES

Fairbanks, Morse & Co.
Merrick Scale Mfg. Co.
Testing Machines, Inc.

### SCREEN PLATES

Bird Machine Company
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.

### SCREENS

Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Link Belt Company

Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Stephens-Adamson Mfg. Co.
Valley Iron Works Co.

**SHEET MACHINES**
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Valley Iron Works Co.

**SHOWER PIPES**
Bird Machine Company
DeZurik Shower Company
Downingtown Mfg. Co.
Moore & White Co.
Sandusky Fdy. & Mch. Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

**SHREDDERS**
Bauer Brothers Co.
Carthage Machine Co.
Gibbs-Brower Company, Inc.

**SIZING**
American Cyanamid Company, Industrial Chemicals Division
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Hercules Powder Co.
The Hubinger Co.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Stein-Hall Co., Inc.

**SIZING TESTER**
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.

**SLIME CONTROL**
The Dow Chemical Company
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.
Monsanto Chemical Co.
National Aluminate Corp.
Rohm & Haas Co.
Vanderbilt Co., R. T.

**SLITTERS**
Black Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Suburban Machine Co.
Valley Iron Works Co.
Waldron Corp., John

**SMOKE STACKS**
The Biggs Boiler Works Co.
Chicago Bridge & Iron Co.

**SOFTNESS-STIFFNESS TESTER**
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.

**SOLUBLE OILS**
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

**SPECIAL MACHINERY**
Dilts Machine Works
The Sandy Hill Iron & Brass Works
John Waldron Corp.

**SPLICING TISSUE**
Bunge Pulp & Paper Co.
Williams-Gray Co.

**STAINLESS STEEL**
American Cast Iron Pipe Co.
Armco Steel Corp.
Michigan Steel Casting Co.
U. S. Steel Corp.

**STARCH**
American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Clinton Foods, Inc.
The Hubinger Co.
National Starch Products Inc.
Stein-Hall Co., Inc.

**STEAM JOINTS**
The Moore & White Co.
Shartle Bros. Mch. Co.

**STEAM SPECIALTIES**
Babcock & Wilcox Co.
Combustion Engrg. Co., Inc.
Davis Engrg. Corp.
Johnson Corp.
Perfecting Service Corp.
Stickle Steam Specialties Co.

**STEEL**
Armco Steel Corp.
Carnegie Illinois Steel Co.
Lukens Steel Company
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
U. S. Steel Corp.

**STEEL, CLAD**
Babcock & Wilcox Co.
Lukens Steel Company

**STEEL TANKS**
The Biggs Boiler Works Co.
Chicago Bridge & Iron Co.
The Sandy Hill Iron & Brass Works

**STRETCH TESTER**
Thwing-Albert Instrument Co.

**STUFF CHESTS**
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

**SUCTION BOXES**
Black Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

**SULPHUR**
American Cyanamid Company, Industrial Chemicals Division
Texas Gulf Sulphur Co.
Witco Chemical Company

**SULPHUR BURNERS**
Valley Iron Works Co.

**SULPHUR DIOXIDE**
American Cyanamid Company, Calco Chemical Div.
Virginia Smelting Co.

**SUPERCALENDERS**
The Appleton Machine Co.
B. F. Perkins & Son, Inc.

**SYNTHETIC LATICES**
American Cyanamid Company, Industrial Chemicals Division
American Anode Div.
The Goodyear Tire & Rubber Company
Nopco Chemical Co.

**TACHOMETERS**
The Brown Instrument Co.

**TAKE OFF UNITS**
Dilts Machine Works (Kohler Systems)

**TALC**
American Cyanamid Company, Industrial Chemicals Division
Vanderbilt Co., R. T.

**TANKS**
The Biggs Boiler Works Co.
Chicago Bridge & Iron Co.
Kalamazoo Tank & Silo Co.
The Noble & Wood Machine Co.
B. F. Perkins & Sons, Inc.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

**TEARING TESTERS**
Thwing-Albert Instrument Co.
Testing Machines, Inc.

**TENSILE TESTERS**
Bunge Pulp & Paper Co.
Thwing-Albert Instrument Co.
B. F. Perkins & Son, Inc.
Testing Machines, Inc.
Nopco Chemical Co.


# What SOLVAY Means to Paper Makers

**PAPER MAKERS KNOW** that SOLVAY stands for chemicals of quality . . . the kind of quality that helps your plant operate more efficiently, more economically.

**SOLVAY ALSO MEANS** long experience in the paper field—over half a century!

**THE COAST-TO-COAST** chain of SOLVAY warehouses and stock points are your assurance of prompt delivery . . . and SOLVAY'S strategically located manufacturing plants guarantee a steady supply of the materials that are vital to paper production.

**SOLVAY TECHNICAL SERVICE** offers both laboratory and field aid by paper specialists who know paper making from A to Z.

Soda Ash
Caustic Soda
Caustic Potash
Chlorine
Calcium Chloride
Nytron
Sodium Bicarbonate
Specialty Cleansers
Sodium Nitrite
Para-dichlorobenzene
Ortho-dichlorobenzene
Monochlorobenzene
Methanol
Ammonium Chloride
Formaldehyde
Potassium Carbonate
Ammonium Bicarbonate

SOLVAY
LIQUID CHLORINE
CAUSTIC SODA
SODA ASH

**SOLVAY SALES DIVISION**
ALLIED CHEMICAL & DYE CORPORATION
**40 Rector Street, New York 6, N. Y.**

BRANCH SALES OFFICES

Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit • Houston
New Orleans • New York • Philadelphia • Pittsburgh • St. Louis • Syracuse

**THICKENERS, DECKERS AND SAVEALLS**
The Appleton Machine Co.
Bird Machine Company
Bulkley, Dunton Pulp Co., Inc.
Carthage Machine Co.
Chicago Bridge & Iron Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Hardinge Co., Inc.
Moore & White Co.
D. J. Murray Mfg. Co.
Oliver United Filters, Inc.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

**TITANIUM**
American Cyanamid Co., Calco Chemical Div.
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.

**TOOLS**
Walworth Company

**TRACTORS AND TRUCKS**
Towmotor Corp.

**TRANSMISSIONS**
Link Belt Company

**TRAPS**
Armstrong Machine Works
Crane Co.
Johnson Corporation
Sharples Bros. Mch. Co.
Stickle Steam Specialties Co.

**TUBES**
Babcock & Wilcox Co.
National Tube Co.

**TUBING MACHINES**
Dilts Machine Works

**TUBING, MECHANICAL**
National Tube Co.

**TUBS**
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

**TURBINES**
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.

**UNWINDERS**
Dilts Machine Works (Kohler Systems)
John Waldron Corp.

**USED EQUIPMENT**
Gibbs-Brower Co.
Thomas W. Hall Co.
J. J. Ross Company
Ross Paper Machy. Corp.
Shartle Brothers Machine Co.

**VALVES**
Crane Company
Dilts Machine Works
E. D. Jones & Sons Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
William Powell Co.
Record Fdy. & Mch. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Trimbey Mach. Wks.
Valley Iron Works Co.
Walworth Company

**VORTRAPS**
Nichols Engrg. & Research Corp.

**WASHERS**
Bird Machine Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
Oliver United Filters
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

**WASTE TREATING, EQUIPMENT**
The Dorr Company
Hungerford & Terry, Inc.

**WATER CONDITIONING**
Calgon, Inc.
The Dorr Company
General Dyestuff Corp.
Hungerford & Terry, Inc.
National Aluminate Corp.
The Sandy Hill Iron & Brass Works

**WATER DISPERSIONS**
American Anode, Inc.
American Cyanamid Company Industrial Chemicals Division
Rohm & Haas Co., Resinous Products Div.

**WATER FILTERS**
Green Bay Fdy. & Mch. Wks.

**WATER FINISH EQUIPMENT**
Dilts Machine Works

**WATER PENETRATION TESTER**
Thwing-Albert Instrument Co.

**WATER SOFTENERS**
The Dorr Company
Hungerford & Terry, Inc.

**WATER VAPOR CUPS**
Thwing-Albert Instrument Co.

**WAXES**
Bunge Pulp & Paper Co.
National Wax Company

**WAXING MACHINERY**
Black Clawson Company
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

**WEB TENSION CONTROL**
Dilts Machine Works (Kohler Systems)
John Waldron Corp.

**WELDING EQUIPMENT**
General Electric Company
Walworth Company

**WET MACHINES**
Black Clawson Company
Carthage Machine Co.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Pusey & Jones Company
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

**WETTING AGENTS**
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

**WHITE WATER HEATERS, AUTOMATIC SELF CLEANING TYPE**
Davis Engineering Corp.

**WHITE WATER TREATING EQUIPT.**
The Dorr Company
Hungerford & Terry, Inc.
The Sandy Hill Iron & Brass Works

**WINDERS AND REWINDERS**
The Appleton Machine Co.
Black Clawson Company
Cameron Machine Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Kohler Systems
Langston Co., Samuel M.
Moore & White Co.
Paper Converting Mch. Co.
Potdevin Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Suburban Machine Co.
Waldron Corp., John

**WINDING ROLL CHANGERS**
Dilts Machine Works (Kohler Systems)

**WIRE BRUSHES**
M. W. Jenkins Sons, Inc.

**WIRES**
Appleton Wire Works
International Wire Works
Lindsay Wire Weaving Co.
Williams-Gray Co.

**WIRE BRUSHES**
Williams-Gray Co.

**WOOD SPLITTERS**
The Appleton Machine Co.
Carthage Machine Co.

# ADVERTISERS

## IN THIS ISSUE


A
Alexander Brothers ..... 52
Allis-Chalmers Mfg. Co. ..... 21
American Leather Belting Assn. 32
Appleton Machine Co. ..... 37
Appleton Wire Works ..... 36
Appleton Woolen Mills ..... 69
Asten Hill Mfg. Co. ..... 125

B
Babcock & Wilcox Co. ..... 15
Bagley & Sewall Co. ..... 29
Barrell, Wm. L., Co. ..... 44
Bird Machine Co. ..... 63
Birk, F. Paul ..... 149
Black-Clawson Co. ..... 27
Blaw Knox Co. ..... 157
Bridgeport Safety Emery Wheel Co. ..... 166
Brown Co. ..... 20
Bunge Pulp & Paper Co. ..... 156

C
Cambridge Instrument Co. ..... 162
Cameron Machine Co. ..... 39
Chicago Bridge & Iron Co. ..... 31
Ciba Company ..... 85
Classified Advertising ..... 158
Cleveland Crane & Engrg. Co. 133
Cochrane Corp. ..... 113
Cowles Chemical Co. ..... 156
Crucible Steel Co. ..... 4
Curlator Corp. ..... 3

D
Davis Engrg. Corp. ..... 137
DeLaval Steam Turbine Co. ... 42
DeZurik Shower Co. ..... 152
Dietz Machine Works ..... 154
Dorr Co. ..... 73
Downingtown Mfg. Co. ..... 2 & 16
Du Pont, E. I. de Nemours & Co., Dyestuffs Div. ..... 43
Du Pont, E. I. de Nemours & Co., Electro Chem. Div. ... 115
Du Pont, E. I. de Nemours & Co., Polychemical Div. ..... 89
Durirron Co. ..... 47

E
Ehasco Services Inc. ..... 162
Efficiency Engrg. Co. ..... 149
Elwell Parker Elec. Co. ..... 171

F
Fairbanks, Morse & Co. ..... 161
Farrell Birmingham Co. ..... 49
Ferguson, H. K., Co. ..... 143

G
Gamlen Chemical Co. ..... 141
General Dyestuff Corp. ..... 35
General Electric Co. ..... 90 & 91
Gibbs, Ralph E. ..... 143
Golden Anderson Valve Spec. Co. ..... 14
Goodrich Chemical Co. ..... 112
Goslin Birmingham Mfg. Co. .. 152
Gotham Ink & Color Co. ..... 162
Gottesman & Co., Inc. Front Cover
Green Bay Fdy. & Mch. Co. ... 150
Gurley, W. & L. E. ..... 150

H
Hall Co., Inc., Thomas W. ... 159
Hardinge Co., Inc. ..... 134
Haug, Anton ..... 123
Heppenstall Co. ..... 67
Hercules Powder Co. ..... 13
Heyden Chem. Co., Aktivin Div. ..... 99
Huber Corp., J. M. ..... 127
Huyck & Sons, F. C. ..... 38

J
Johnson, Alvin H., Co. ..... 156
Johnson Corp. ..... 152
Jones & Sons Co., E. D. ..... 135

K
Kalamazoo Tank & Silo Co. ... 119
Kinsley Chemical Co. ..... 156
Knox Woolen Co. ..... 148

L
Langston, Samuel M., Co. ..... 41
Lawton, C. A., Co. ..... 144
Lindsay Wire Weaving Co. .... 33
Lobdell-United Co. ..... 54
Lukens Steel Co. ..... 48
Lyddon Company ..... 147

M
Magnus Metal Div., National Lead Co. ..... 153
Main, Charles T., Inc. ..... 156
McBride, Edw. J., Co. ..... 154
Meyer, C. R., & Sons Co. ..... 154
Michigan Steel Casting Co. ... 156
Monsanto Chemical Co. ..... 101
Morden Machines Co. ..... 22
Mt. Hope Mchy. Co. ..... 131
Murray, D. J., Mfg. Co. ..... 45

N
Nash Engrg. Co. ..... 150
National Aniline Div., Allied Chem. & Dye Corp. ..... 7
National Wax Co. ..... 152
Newport News Shipbldg. & Dry Dock Co. ..... 34
N. Y. Color & Chem. Co. ..... 155
Niagara Alkali Co. ..... 65
Nichols Engrg. & Research Corp. 111
Nopco Chemical Co. ..... 131
Northern Eng. & Mch. Co. ... 162
Norton Company ..... 71

O
O'Donoghue, Roderick ..... 156

P
Paisley Products, Inc. ..... 19
Paper & Industrial Appliances . 95
Parsons & Whittemore Co. .... 147
Perkins-Goodwin Co. ..... 109
Permutit Co., The ..... 163
Potdevin Machine Co. ..... 155
Powell, Wm., Co. ..... 12
Price & Pierce, Ltd. ..... 148
Pusey & Jones Corp. ..... 26 & 27

R
Raymond Services Inc., Charles P. ..... 158
Record Fdy. & Mch. Co. ..... 148
Red Ray Mfg. Co. ..... 75
Reichhold Chemicals, Inc. .... 30
Reliance Elec. & Engrg. Co. ... 17
Research Corp. ..... 25
Restigouche Co., Ltd. ..... 169
Rice Barton Corp. ..... 129
Rogers & Co., Samuel C. ..... 167
Roots Connersville Blower Corp. 136
Ross Company, J. J. ..... 159
Ross, I. O., Engrg. Corp. ..... 6
Rust Engrg. Co. ..... 156

S
Sandusky Foundry & Mch. Co.. 154
Shartle Bros. Mch. Co. ..... 77
Shuler & Benninghofen ..... 28
Sinclair Refining Co. ..... 8 & 9
Smidth, F. L., & Co. ..... 107
Smith & Winchester Mfg. Co. .. 24
Socony Vacuum Oil Co. Back Cover
Solvay Sales Div., Allied Chem. & Dye Corp. ..... 169
Stein Hall Co., Inc. ..... 164
Sonoco Products Co. ..... 153
Sun Oil Co. ..... 50
Sutherland Refiner Corp. ..... 97

T
Taylor, Stiles & Co. ..... 165
Testing Machine Inc. ..... 150
Titanium Pigment Corp. ..... 18
Towmotor Corp. ..... 139
Trimbey Machine Works ..... 105

U
U. S. Rubber Co. ..... 23

W
Waldron, John, Corp. ..... 10 & 11
Wallerstein Co. ..... 162
Walworth Co. ..... 46
Waterbury Felt Co. ..... 162
Western Gear Works ..... 163
West Virginia Pulp & Paper Co. 148
Weyerhaeuser Timber Co. ..... 93
Wheeler Reflr Co. ..... 162
Williams Apparatus Co. ..... 152
Williams-Gray Co. ..... 156
Wyandotte Chemicals Co. ..... 40

# Benefit by ELWELL-PARKER'S Unequaled Experience in Paper Handling

Elwell-Parker pioneered the paper roll handler 30 years ago. This new model with rotating clamp device lifts 1500 to 3500 lb. rolls 17½' for extra high tiering. Permits close, orderly stacking, vertically or horizontally. By eliminating need for pallets, this clamp saved one user 20% in storage space alone. Reduction in damage to paper repays truck investment quickly.

From the wealth of its 44 years' experience, Elwell-Parker has originated many unique truck attachments for the Paper Industry *exclusively* — and also has devised operating practices to insure greatest returns from their use . . . Today, the majority of power trucks used in the Paper Industry are Elwell-Parkers . . . In transporting *every* type of paper load, through Mill and Warehouse, Elwell-Parker's *longer* experience can help you speed production without interrupting present operations. Safety is increased. NEW profits follow . . . Available in electric or gas powered models . . . For quick action, call in your *E-P* man. The Elwell-Parker Electric Company, 4500 St. Clair Ave., Cleveland 3, Ohio.

**ELWELL-PARKER**
**POWER INDUSTRIAL TRUCKS**
*Established 1893*

SCIENTIFIC PAPER HANDLING is explained in this free booklet. 44 pages; 125 photos. Ask for "Industrial Logistics in Paper."

Sturdy Elwell-Parker High-Lift Truck takes heavy loads of Print Stock on skids from packing room; transports and tiers them to warehouse roof girders; then reclaims them, loading directly into boxcar or highway truck as needed.

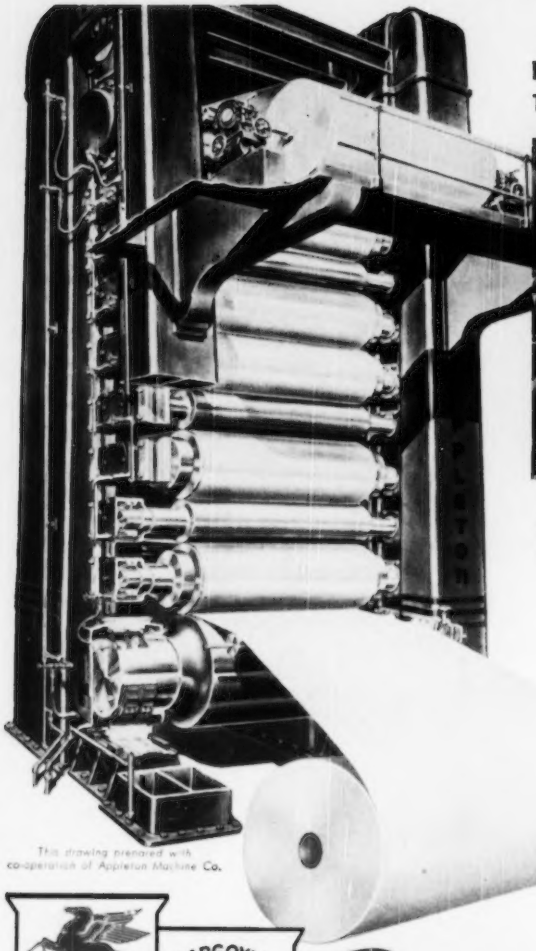
Transporting loaded skid of pulp for cigarette paper from beater. E-P trucks synchronize flow of materials to and from processing machinery to match its output.

Baled pulp being carried on bare forks of truck. High stacking saves floor space.

Form No. A-10,058

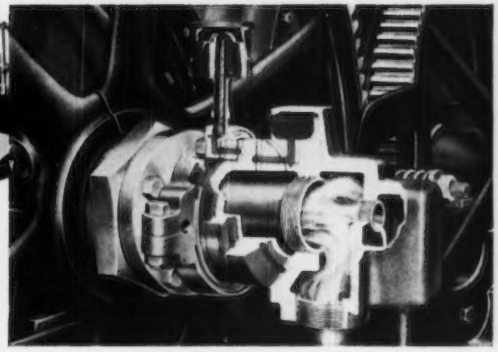
Printed in U.S.A.

# First Choice of U.S. Paper Mills!



This drawing prepared with co-operation of Appleton Machine Co.

**MORE PAPER MILL MACHINERY IS LUBRICATED BY SOCONY-VACUUM THAN BY ANY OTHER OIL COMPANY**



## HERE'S WHY...

Famous Gargoyle oils and greases are backed by the world's greatest lubrication knowledge and engineering service, and are constantly being improved by Socony-Vacuum creative research.

Records of leading mills prove Gargoyle lubricants speed production, improve quality, reduce friction losses and maintenance costs. They meet all leading paper machine builders' requirements for the Correct Lubrication of their machines.

Call Socony-Vacuum for the *genuine* benefits of Correct Lubrication.

SOCONY-VACUUM OIL COMPANY, INC., and Affiliates:
MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORP.

SOCONY-VACUUM GARGOYLE Lubricants

# Socony-Vacuum

*Correct Lubrication*

WORLD'S GREATEST LUBRICATION KNOWLEDGE AND ENGINEERING SERVICE